

**Operators Manual**  
**Model # AB, RTF, ABS, ABS2**



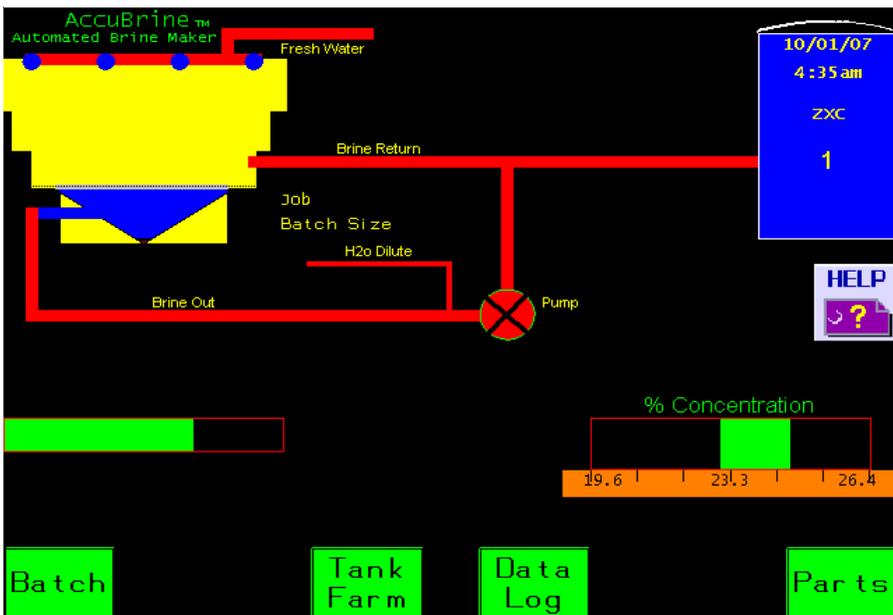
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## Producing A Brine Batch

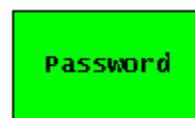


To access the Batch page, set Password to 10.

To Change the password press the help button.



Then Press the Password button.



Indicates No Flow

Indicates Flow

% completion    % of batch remaining before Completion

Concentration    Actual concentration of brine as a % of weight

Batch To Start Production, Press to enter desired brine volume & desination  
After entering batch information use the auto start switch to begin process.

Brine Out = Flow of brine from salt tank  
Dilute = Flow of fresh water into brine to reduce conce  
Brine Return = Brine over or under tolerance is returne  
Remote Fill = Brine is transferred to a aplicator tank tru  
Fresh Water = Water entering the Salt Tank

Press items on screen

Summary of Fault    for Service & Support call

Enlarge video

10

ESC	7	8	9	←
◀	4	5	6	▶
+/-	1	2	3	clr
	0	.	Enter	

By Pressing the Password button, a key pad appears as shown. Key in 10 and press the Enter button.



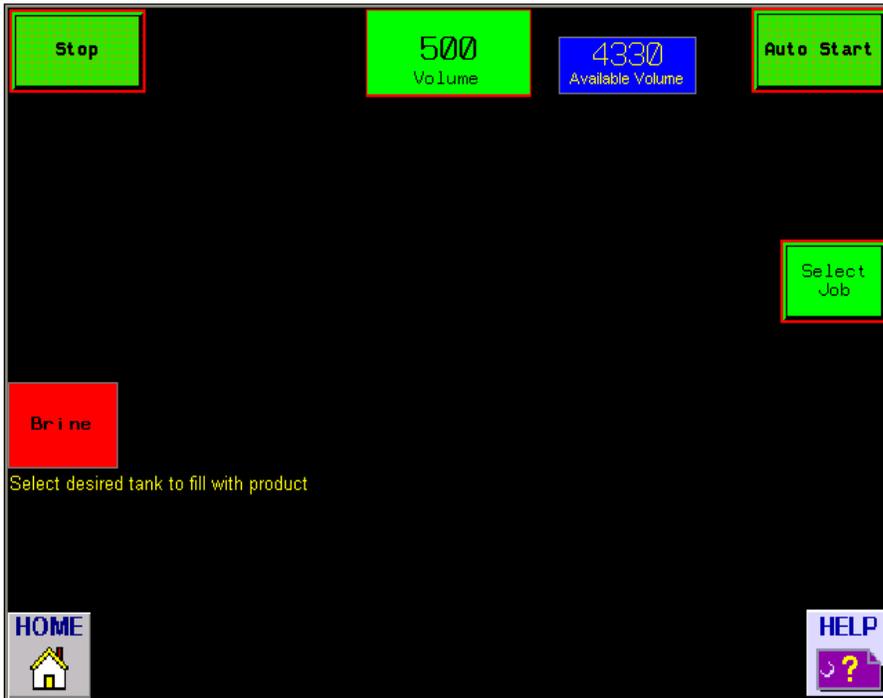
Press the Escape button to go back to the HOME page.



Press the Batch Button to produce brine.



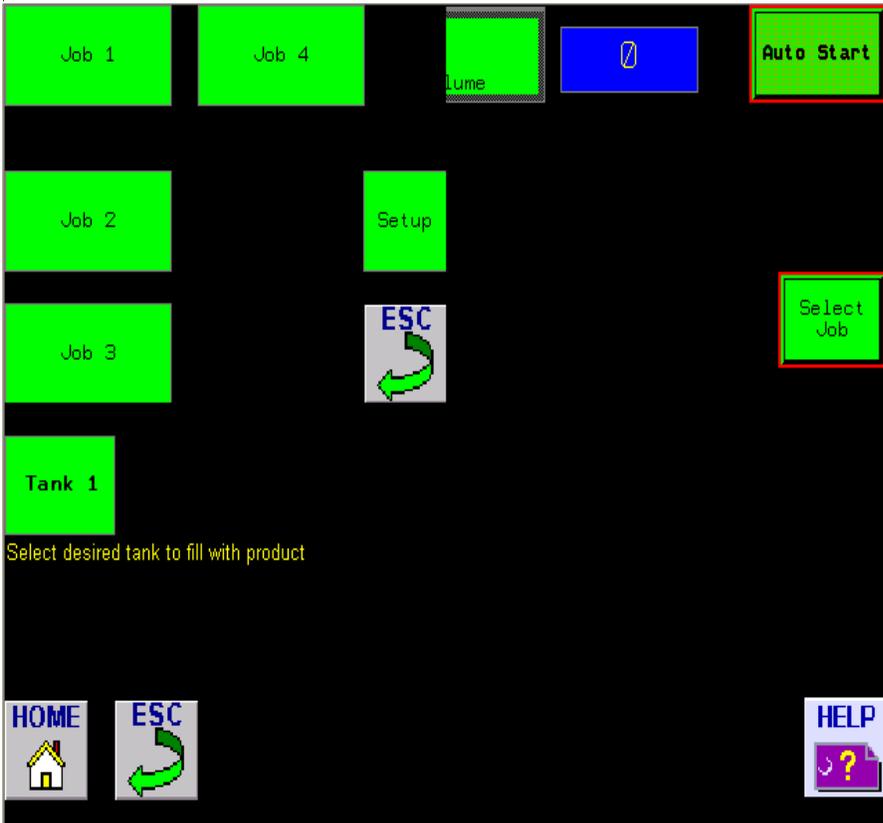
Caution: To produce a batch of product. The machine must be in Normal or Winterize mode. Use Simulate mode for training only. See Operating Modes section.



Select a Job to record Data to by pressing the Select Job Button.



A pop up window appears as shown below.



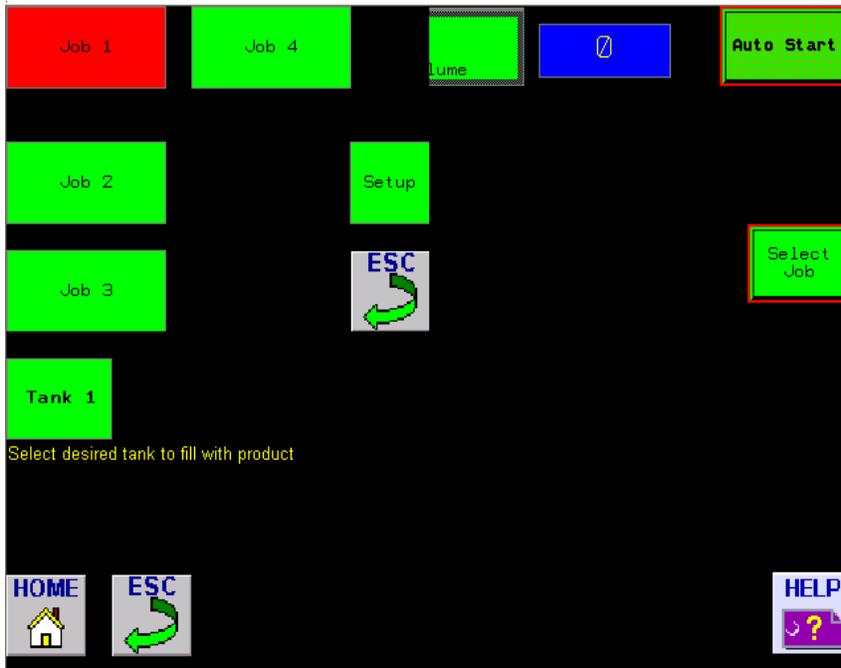
Press the desired Job to record data to from the pop up window.



The selected Job will appear in red.



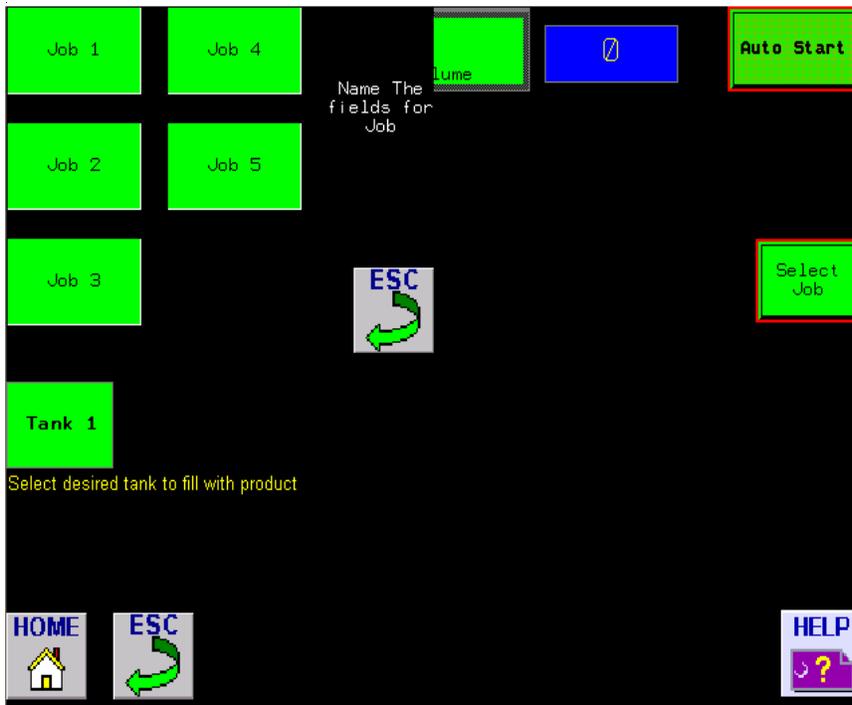
Note: Through out this manual, when a button is pressed and turns red, that feature has been Activated.



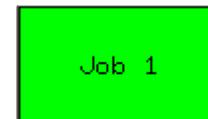
Press the setup button to name each Job.

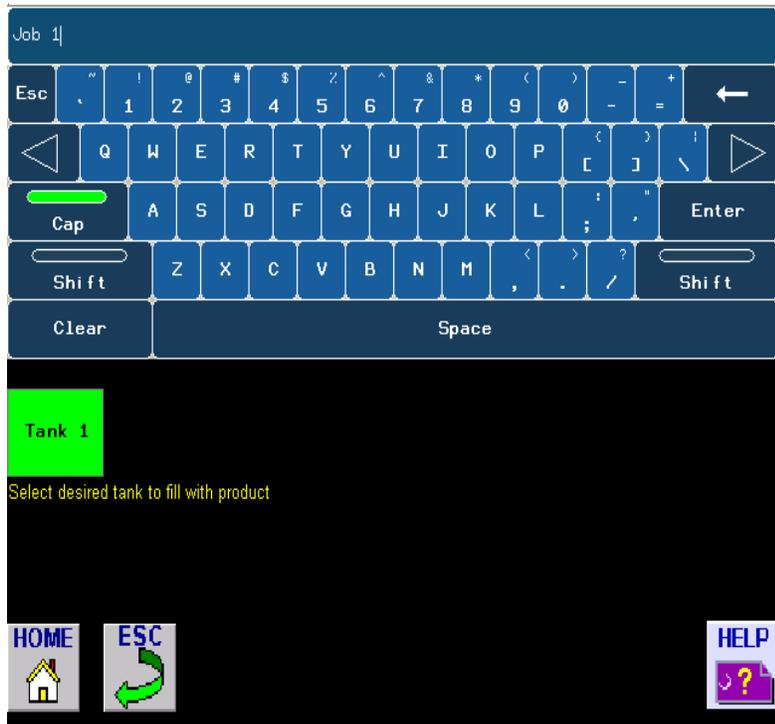


A pop up window appears as shown below.

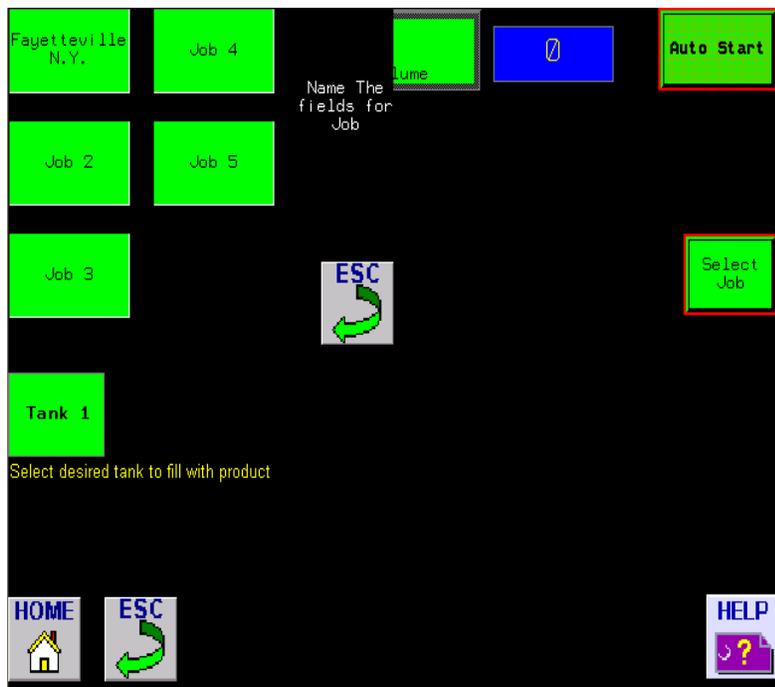


Select the Job 1 button and a keyboard display will appear.





Type in the name of the desired Job on the keyboard and press enter.



The name entered will be displayed as shown. Do this for each Job as desired. When finished, push the ESC button to stay at the Batch page.

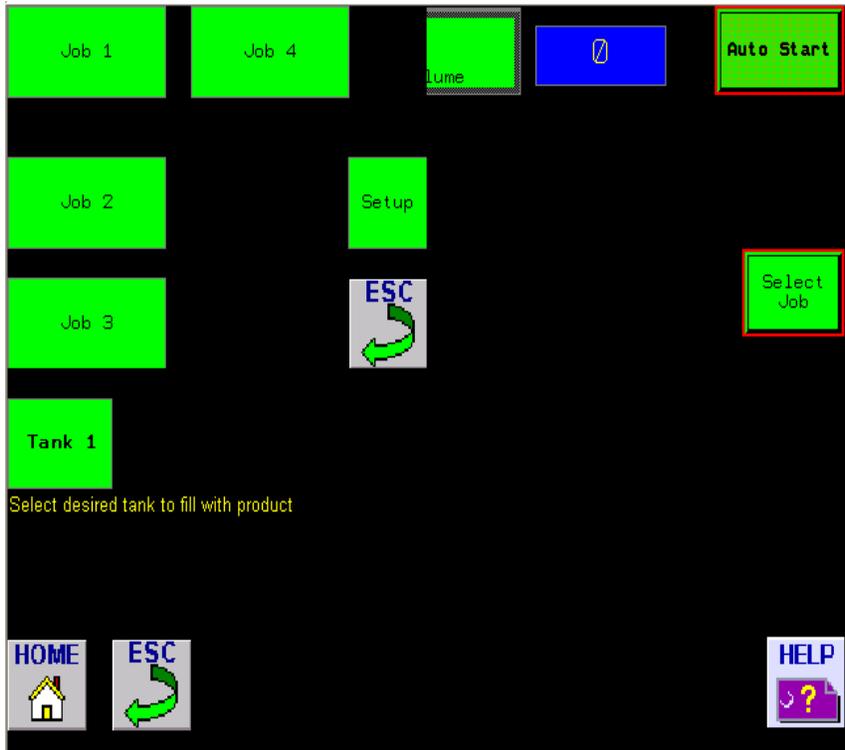


The available volume indicator shows how much brine can be made and sent to the brine storage tank.

Press the Green Total Volume button on the batch page to select the quantity of brine to produce.



Key in the desired quantity of brine to produce via key pad then press the ENTER button.



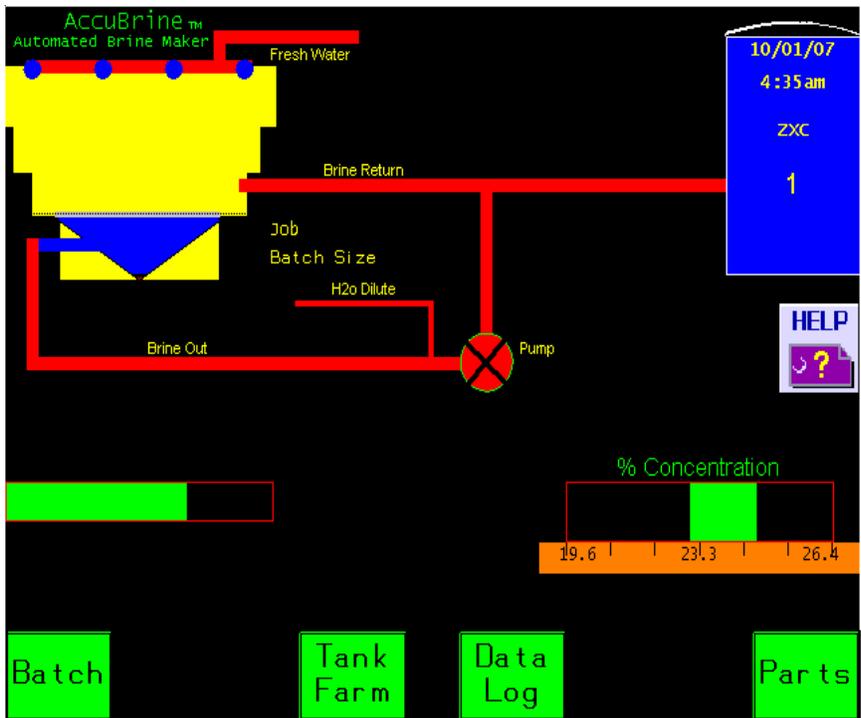
To start producing Brine. Press the Job Select button and select specific job if desired.

Press the ESC button then press the Auto Start button from the display or use the Auto / Hand switch on the panel by rotating to Auto and releasing.



To Stop a batch at any time, either press the Stop button on the display from the Batch Page or use the Auto /Hand Switch and momentarily rotate to Hand and back to center.





If the Auto start button was pressed then the display will change to the main screen.



If the Auto / Hand Switch was used to start the batch press the Home button to return to the HOME screen. ESC to go to previous page.

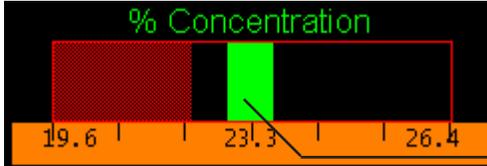
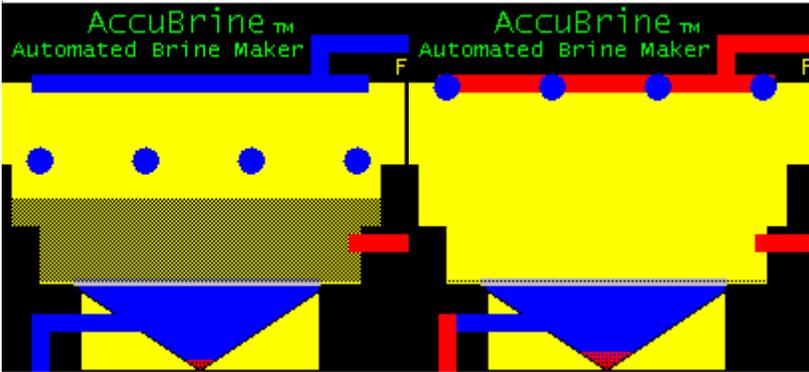


Or

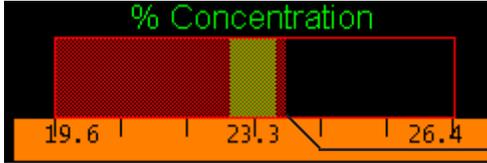


### Understanding the HOME Screen

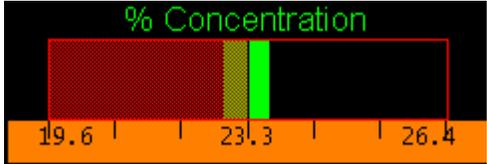
The Gray shaded area in the yellow, shown below is a visual for the water level in the salt tank. The blue dots above the yellow salt tank represent water flow to the salt tank. When the red line above the salt tank turns blue, there is fresh water flow to the salt tank.



Concentration Below Target (Weak Brine)



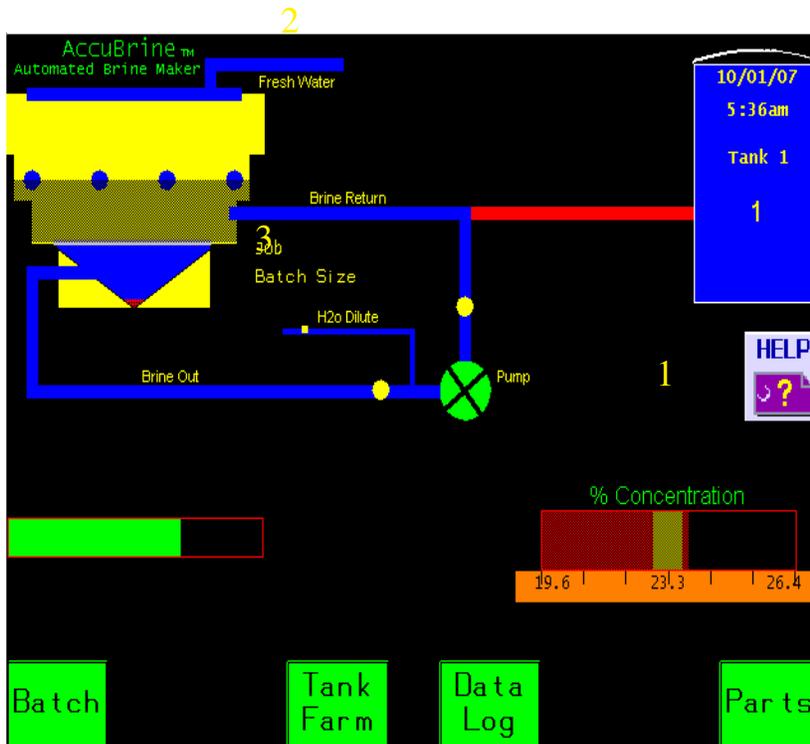
Concentration Over Target (Strong Brine)



Concentration At Target (Good Brine)

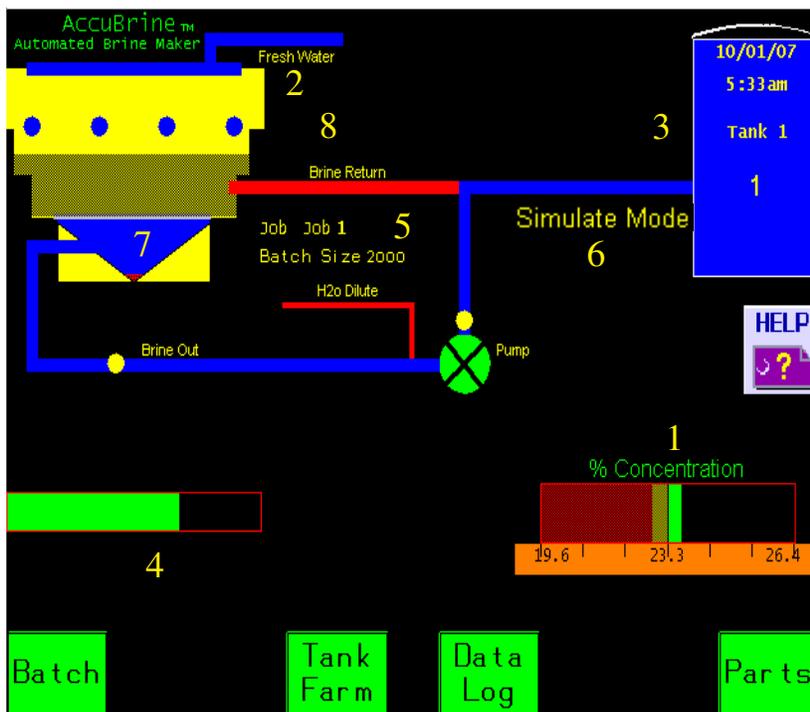
The green rectangle represents the acceptable concentration with deviation.

The right edge of the red line represents the actual concentration.



As brine is being produced. The animation on the screen illustrates what is occurring with the machine. (see call out numbers)

1. Brine is over-concentrated and is being diverted to Salt Tank.
2. Fresh water is flowing to the Salt tank.
3. The Dilute valve is opening to dilute the over concentrated brine to the desired concentration.

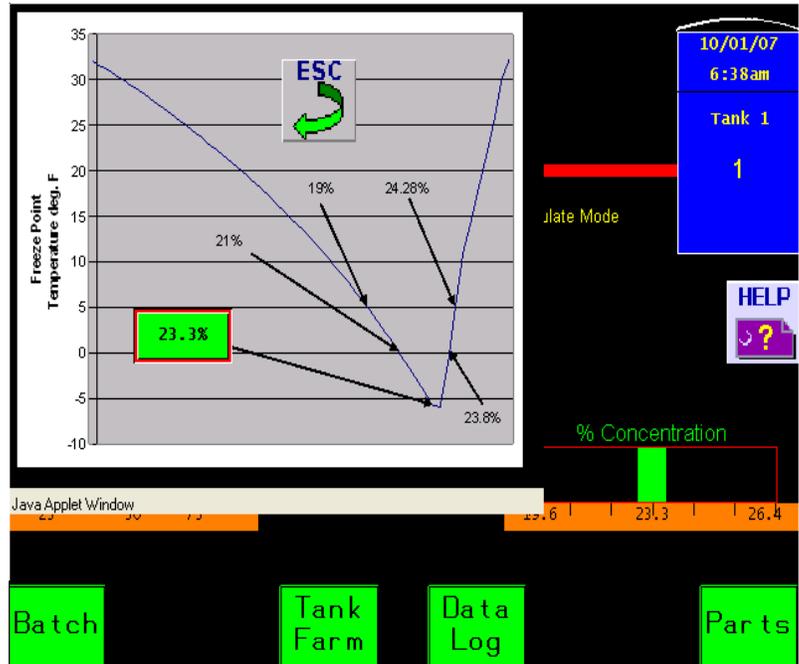
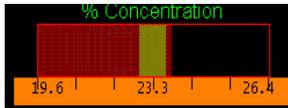


As seen to the left:

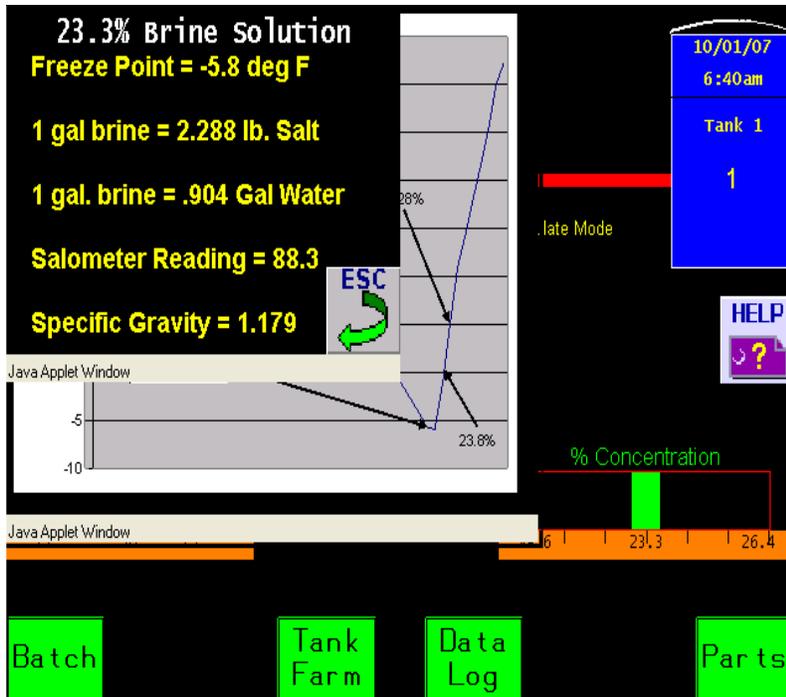
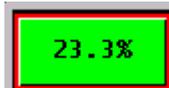
1. Brine is within tolerance.
2. Water is flowing to the Salt tank.
3. Product Flow is to Storage tank 1.
4. Batch is approximately 75% complete.
5. Data is logged to Job 1 & the batch size is 2,000.
6. The system is in Simulate Mode (See Operating Modes section).
7. Material build up in Sump is indicated in Red.
8. Recycled Water (If feature is installed) is flowing to the salt tank.

## Salt Concentration and Eutectic Curve

By touching the concentration meter, a pop up window appears to illustrate the eutectic point of Salt Brine.



Touching the 23.3% button gives specifics on brine at it's eutectic point.



Press the ESC button to close the window.



## Data Log Report

10/14/09 14:17:04 Accubrine Data Log Report					
Daily Log	Job 1	Job 2	Job 3	Job 4	Total Product
Brine Production	2958	0	0	0	2958
Water Usage Fresh	2692	0	0	0	2692
Recycle Water	See Total	See Total	See Total	See Total	0
Salt Usage / ton	3.4	0.0	0.0	0.0	3
Additive 1	0	0	0	0	0
Additive 2	0	0	0	0	0
Additive 3	0	0	0	0	0
Total Job Volume	2958	0	0	0	
Season Log	Job 1	Job 2	Job 3	Job 4	Total Product
Brine Production	2958	0	0	0	2958
Water Usage Fresh	2692	0	0	0	2692
Recycle Water	See Total	See Total	See Total	See Total	0
Salt Usage / ton	3	0	0	0	3
Additive 1	0	0	0	0	0
Additive 2	0	0	0	0	0
Additive 3	0	0	0	0	0
Total Job Volume	2958	0	0	0	





By pressing the Data Log button on the HOME page, the screen to the left appears.



Data Log: The machine will record the amount of Brine produced, water, recycled water, additives and salt used in separate logs that are associated with the Job.



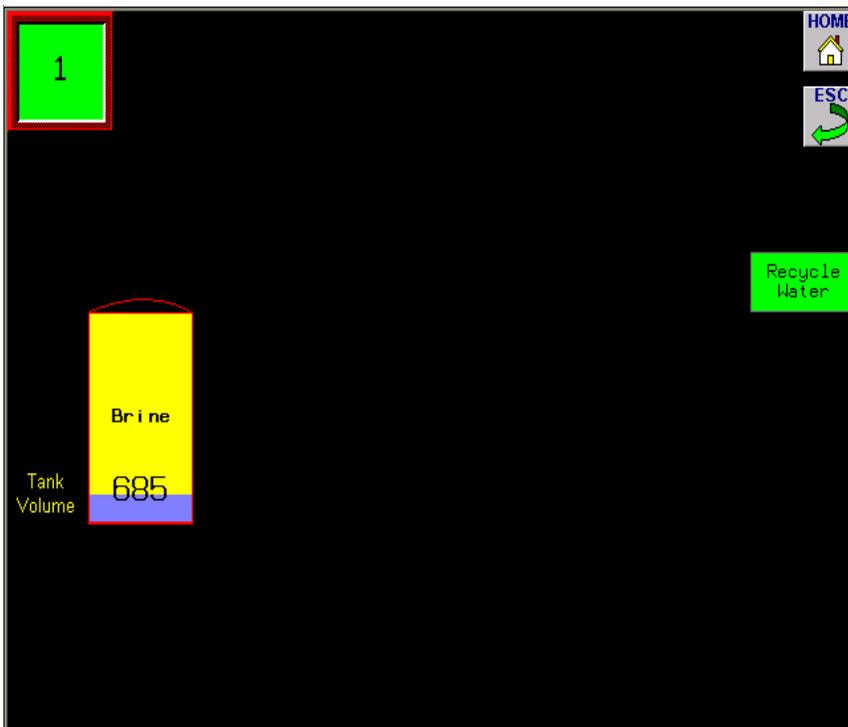
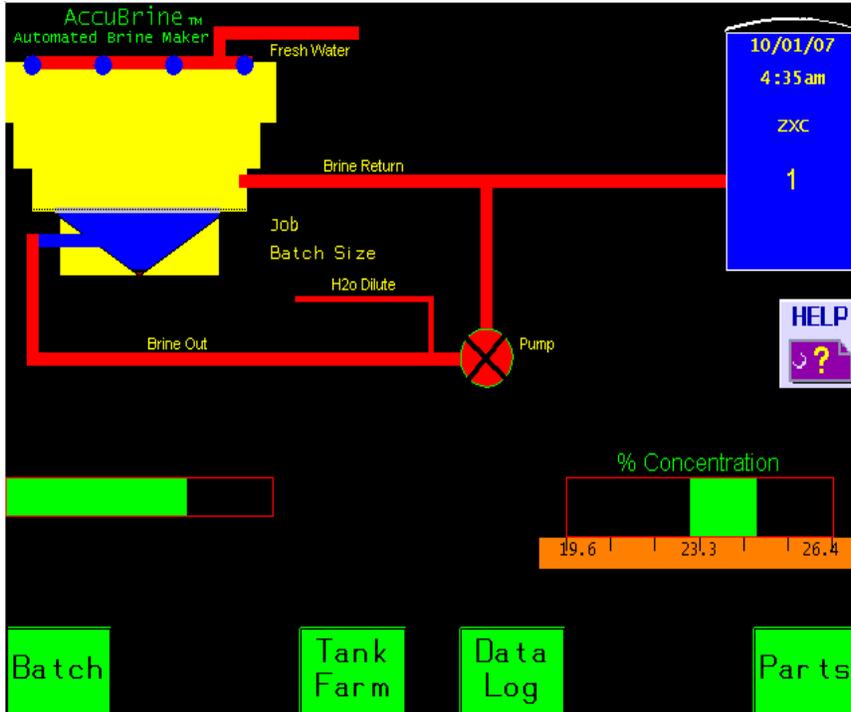
To reset the Daily log, press the Reset Daily Log button. Daily data may be reset to zero at any time.  
Note: You must select each job individually to reset to zero.



The Season log keeps a running tally of production and may only be reset with a high level password activated (see High Level Password section). The Reset Season Counter button will only be visible when the high level password is activated.

## Storage Tank Farm

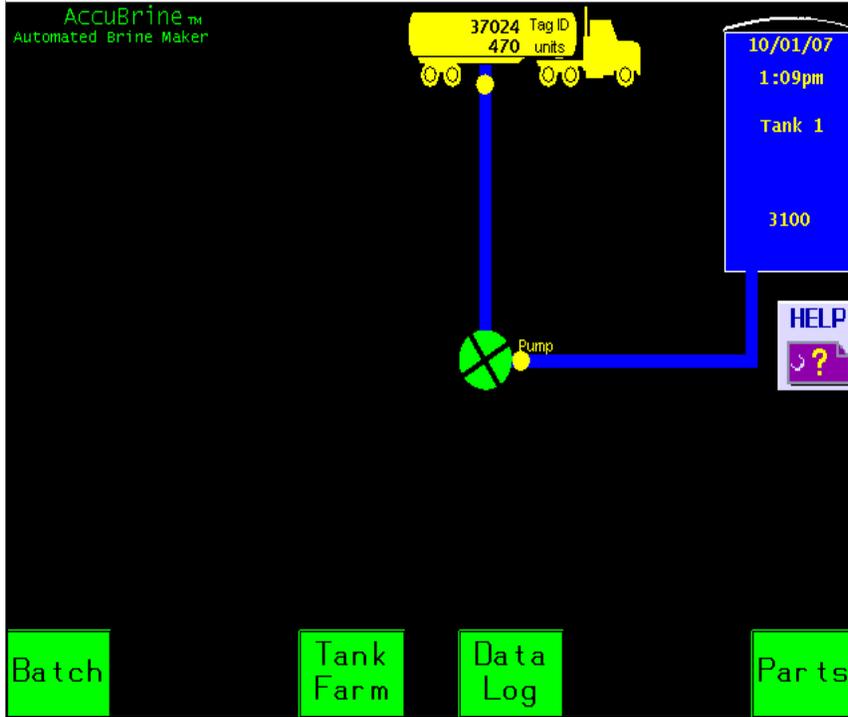
The Tank Farm page shows the storage tanks installed and the current volumes in each tank. To access this page, press the tank farm button on the Home page.



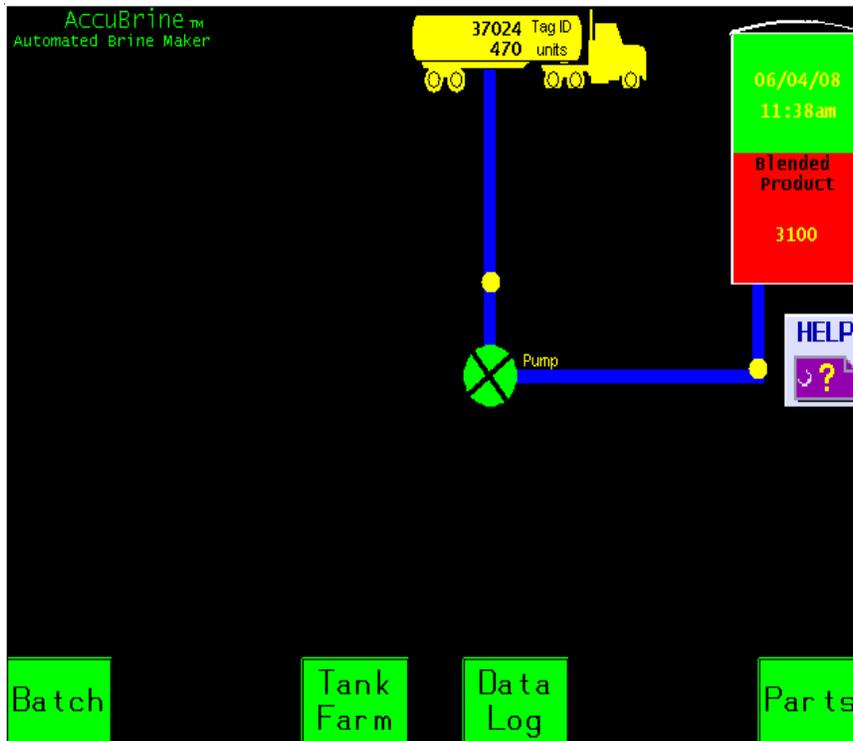
The 1 in the green box indicates that tank number 1 (brine storage) is installed for this system.

## Remote Truck Fill and RFID (if installed)

The Remote fill feature allows trucks to be filled at the touch of a button from a remote switch box. Upon activation, product is diverted to the truck from the Salt tank (if making brine), Brine storage tank or Blended Product storage tank, without the operator needing to open or close valves and start pumps.

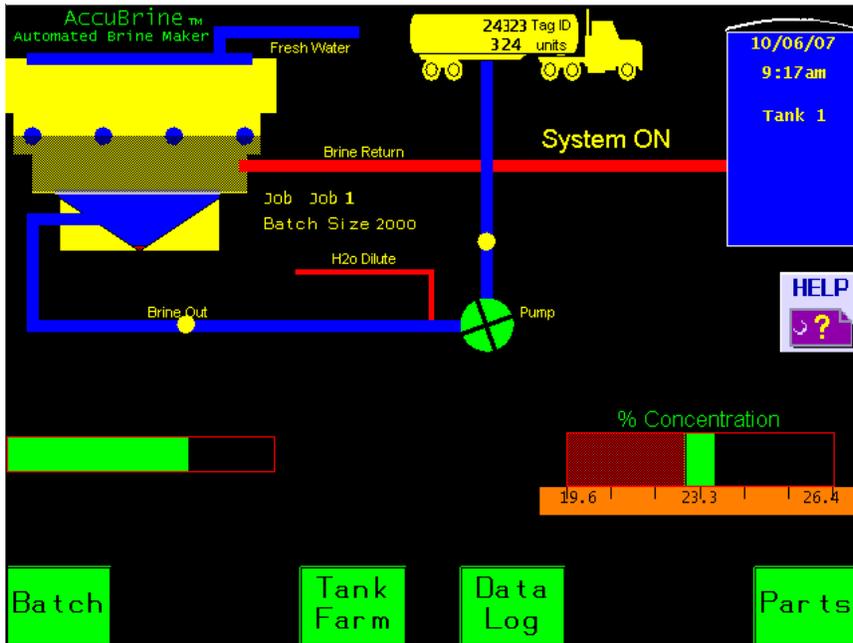


Graphics of HOME screen illustrating Remote fill in operation: Filling Truck from the Brine Storage tank.

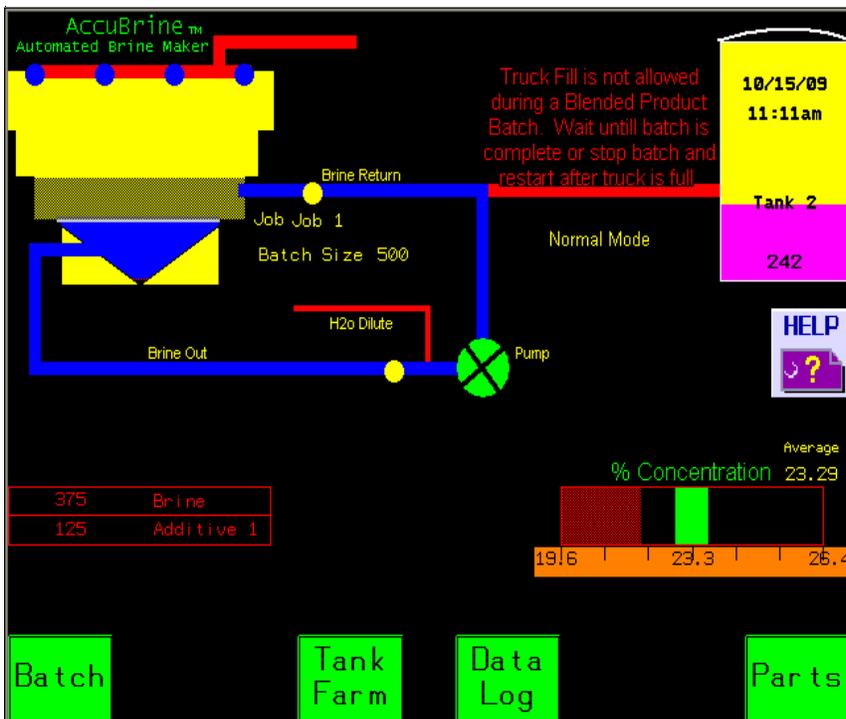


Graphics of HOME screen illustrating Remote fill in operation: Filling Truck from Blended Product Storage tank.

Remote Truck Fill and RFID Operation (if installed) cont.



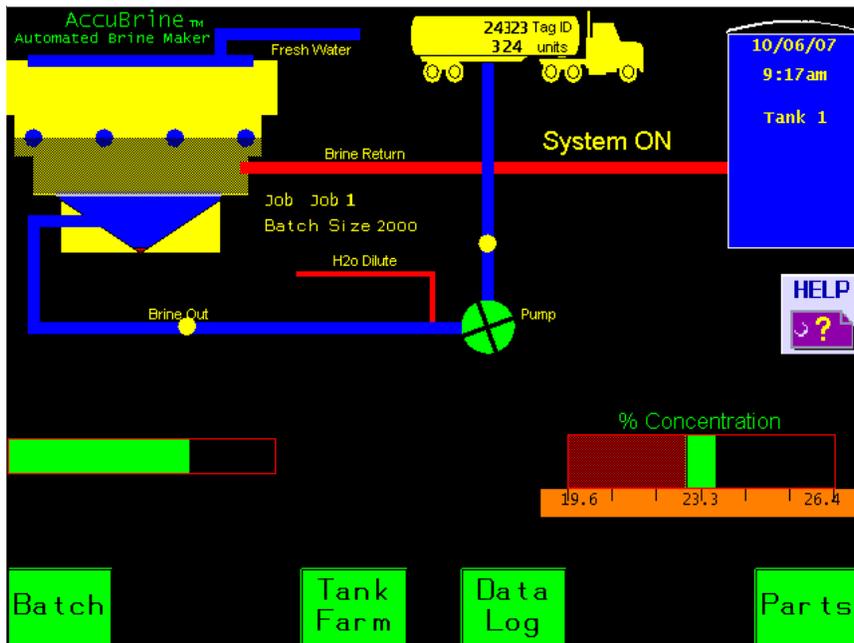
HOME screen graphics illustrating the Remote Truck Fill system in operation during a brine production batch. Filling the truck with fresh brine from Salt Tank when the brine concentration is within the specified range.



When an attempt to fill a truck with the remote fill is made during a Blended Product batch, a notice will pop up stating that the Blended batch must complete before truck filling is allowed. It is possible to fill a truck with Blended Product during a Brine batch. The brine batch will pause to allow the truck to be loaded. The brine batch will then continue from where it was interrupted.

## Remote Truck Fill and RFID Operation (if installed) cont.

The RFID system uses RFID tags to identify what truck is receiving product, when the truck was loaded, what product the truck received and the volume loaded. This data is recorded and stored for use when desired. The system can be set up to load a specific product, a maximum volume, and prevent loading if an ID tag does not match, for security purposes. See RFID Setup Section.



The Tag ID number represents the RFID tag that was read by the RFID card reader. The volume will count up as the truck is being loaded.

The RFID card reader and Truck fill operation switches are combined in one enclosure. The card is passed in front of the reader here. A beep will be heard to indicate the card has been read.



The truck can then be loaded using the start stop switch.

A digital readout will indicate number of gallons being loaded. (see pg. 54 for display value offset)

The green indicator light will light up when an RFID card has been scanned. The light and ID tag will stay active for 45 seconds after turning the switch to stop. This allows the truck to be topped off if needed.

An emergency stop switch is provided and will stop pump.

## Warning Beacon

The Warning Beacon red strobe light will blink steadily with a machine fault. If the salt tank runs out of salt (user defined on set up page 1) and the specified brine concentration cannot be met within 30 minutes, the light will blink for 5 seconds and turn off for 5 seconds and repeat. When a scheduled automatic start occurs, such as winterize mode, and automatic tank fill, the beacon will blink for one minute prior to machine start. The illustration below shows the Warning Beacon.



Deactivating the Warning Beacon:

The Warning Beacon displaying the fault mode will turn off when the machine faults have been corrected and acknowledged from the faults screen. Note: If after 4 hours, the faults have not been corrected and acknowledged, the light will turn off automatically.

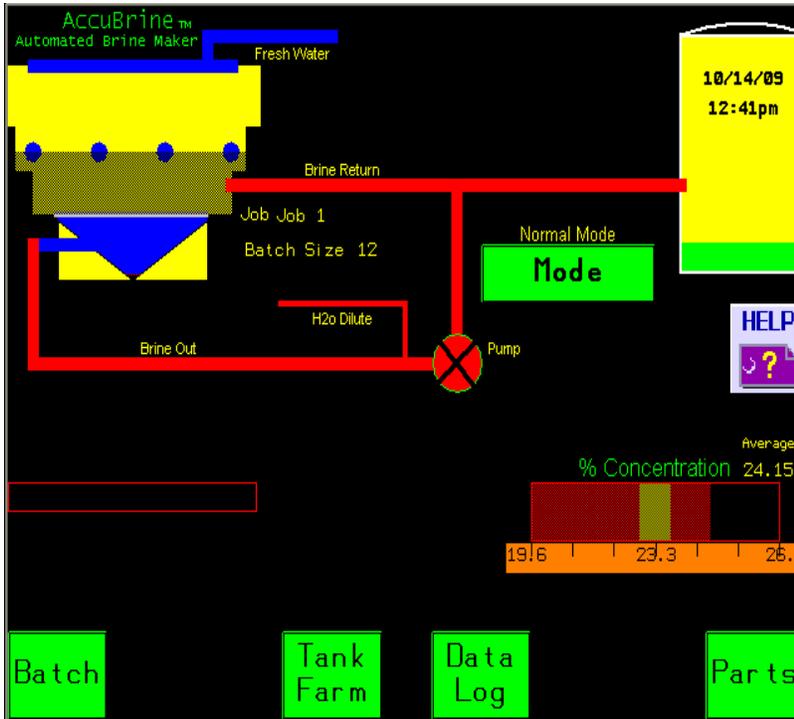
The Warning Beacon displaying the Salt Tank Out of Salt mode will turn off when the machine is restarted.

The warning beacon should be installed in a location easily visible to the operator. See example below.

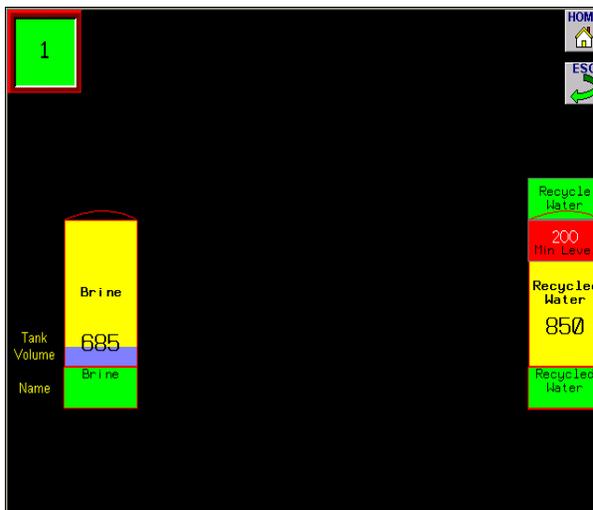


## Recycled Water

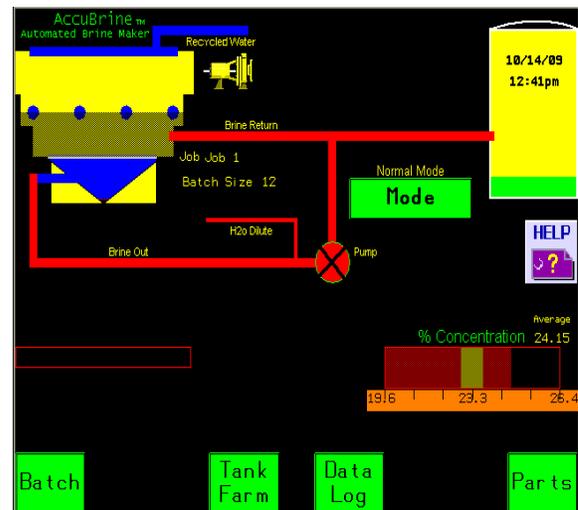
The recycled water system uses recycled or grey water from other processes such as storm run off or truck wash water to make brine. The brinemaker will automatically switch to fresh water when the recycled water level in the storage tank reaches the minimum level.



To view the level of recycled water in the storage tank, press the green Tank Farm button on the Main screen.



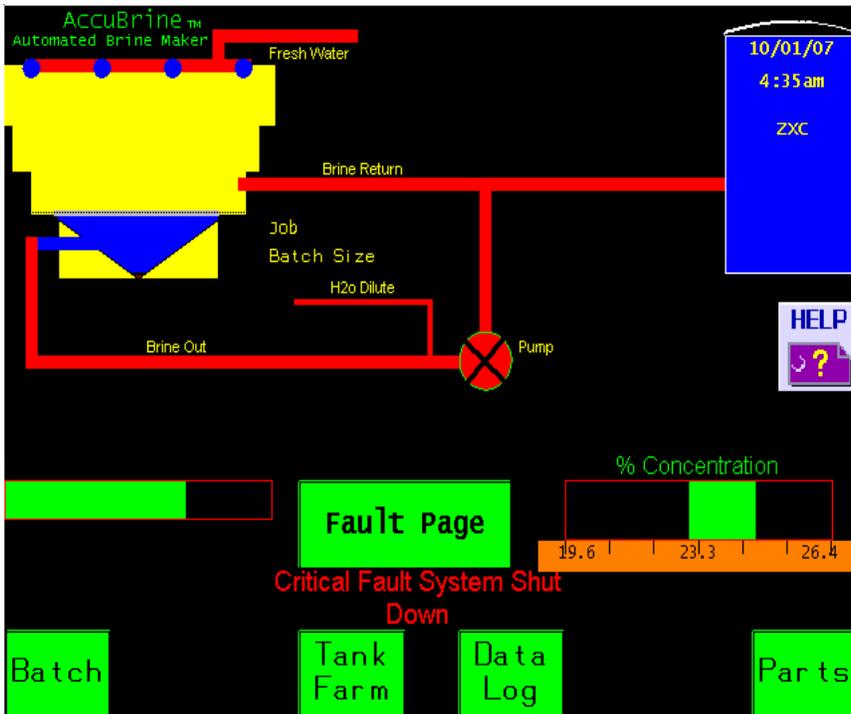
The Tank Farm page shows the Recycled Water tank with the minimum level, and the current tank volume.



When a batch is started, the Main page shows the Recycled Water pump has turned on, and the recycled water is being sent to the salt tank.



**Machine Fault** The machine is constantly monitoring valves and sensors. If a sensor or valve fails, the machine will shut down and a fault will appear on the main page.



Press the blinking Fault Page Button to view the fault.



Pump "ON" NO Flow	Alarm Disabled	Alarm Activated	Disable Fault Shut Down	PLC Fault	Alarm Disabled	Alarm Activated
Pump Thermal Overload Fault	Alarm Disabled	Alarm Activated	Enable Fault Shut Down	Salt Tank 4-20ma Sensor Fault	Alarm Disabled	Alarm Activated
Dilute Valve Fault	Alarm Disabled	Alarm Activated	Reset Fault Alarm	Conductivity 4-20ma Input Fault	Alarm Disabled	Alarm Activated
Water Valve Fault	Alarm Disabled	Alarm Activated		Conductivity Anilizer Fault	Alarm Disabled	Alarm Activated
Tank Valve Fault	Alarm Disabled	Alarm Activated	GO TO: Fault Page 2	24V Power Supply Fault	Alarm Disabled	Alarm Activated
Remote Suction Valve Fault	Alarm Disabled	Alarm Activated	ESC	Remote Destination Valve Fault	Alarm Disabled	Alarm Activated

The fault button will turn red indicating what failure has occurred.

For example: The machine had a fault with the tank valve. By pressing the fault page button, you are led to this fault page. At this point the Tank valve fault button would be red.

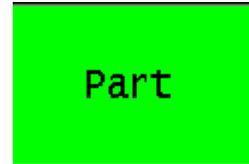
Press the red fault button for possible solutions to the problem. For example:





A pop up window will appear to give basic trouble shooting tips and what fuse to check.

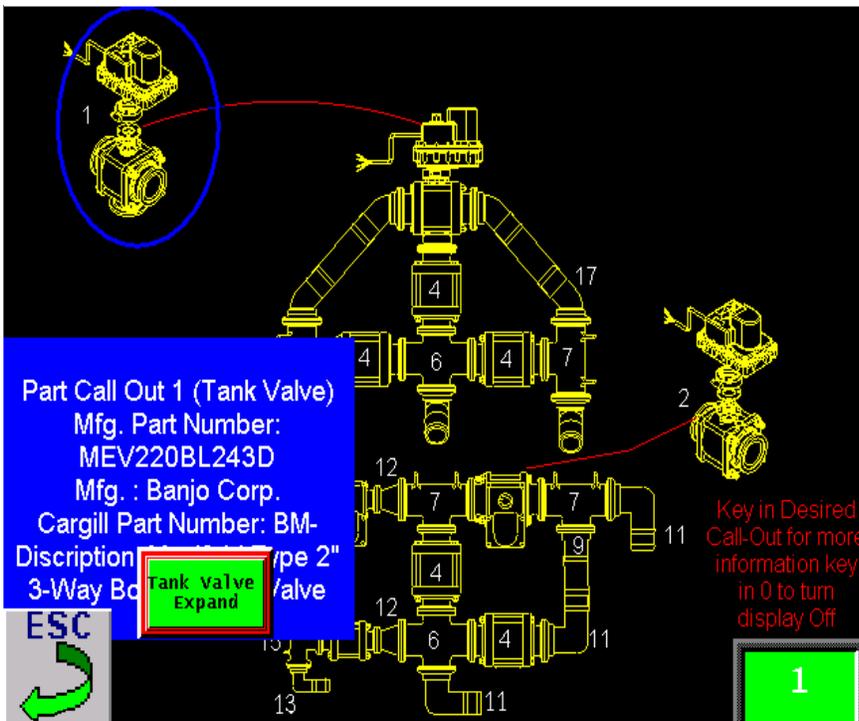
If this does not solve the problem and a part needs to be replaced then press the green PART BUTTON.



Once the problem is corrected press the RESET BUTTON located in the center of the fault page.



Note: It is possible to ignore or disable alarms. This is helpful in diagnosing a problem and if the device is operating correctly but the sensing circuit has failed. Ignore the alarm by pressing the disable alarm button.



Once the Part button is pressed, the display will show where the part is located with a blue circle.

The part number will be in the blue box. Some parts have more detailed drawings and are illustrated via a green expand button.





Expanded view of Tank Valve.

### Summary of Faults

After a machine fault occurs, a log is created of that fault and is displayed on the Summary of Faults page.

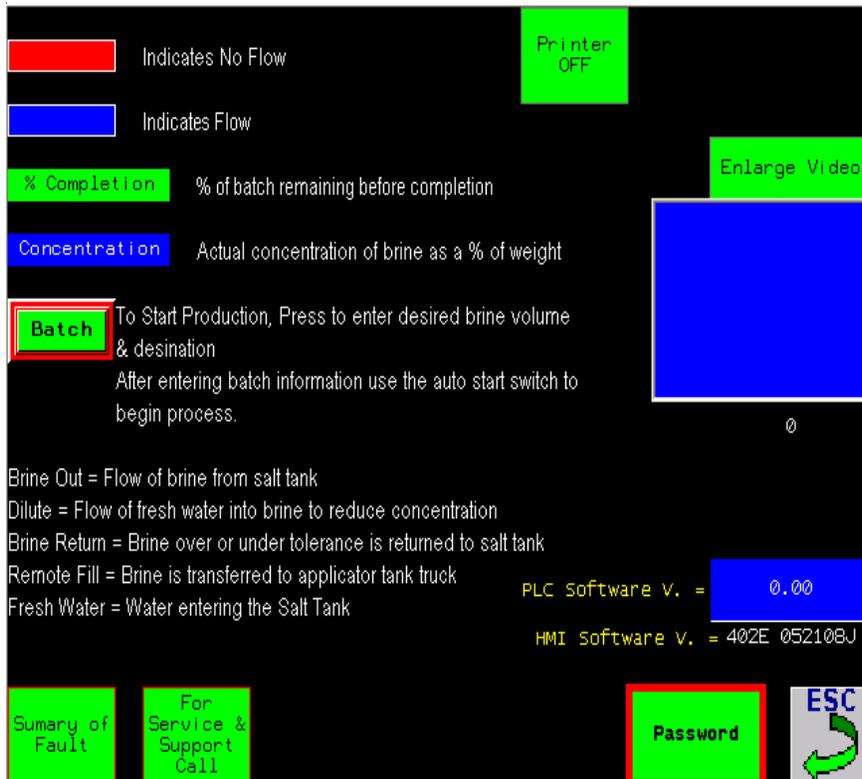
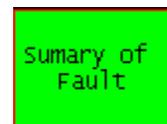
To access the Summary of Faults page, press the HOME button.



From the HOME page press the HELP button



Press the Summary of Faults button in the lower left corner.



## Summary of Faults Page

Date	Time	Message	Value
10/01/2007	16:51:33	Tank valve has failed to open or close	1
10/01/2007	17:00:34	Tank valve has failed to open or close	0
10/01/2007	17:01:43	Tank valve has failed to open or close	1
10/01/2007	17:02:12	Tank valve has failed to open or close	0
10/01/2007	17:03:18	Tank valve has failed to open or close	1
10/01/2007	17:04:37	Tank valve has failed to open or close	0

The summary of fault page gives the time and date of a fault along with a description. The red lines illustrate when the fault occurred. The green lines illustrate when the fault was corrected.

Date	Time	Message	Value
10/01/2007	16:51:33	Tank valve has failed to open or close	1
10/01/2007	17:00:34	Tank valve has failed to open or close	0
10/01/2007	17:01:43	Tank valve has failed to open or close	1
10/01/2007	17:02:12	Tank valve has failed to open or close	0
10/01/2007	17:03:18	Tank valve has failed to open or close	1
10/01/2007	17:04:37	Tank valve has failed to open or close	0
10/01/2007	17:05:58	Tank valve has failed to open or close	0

To clear and acknowledge the fault, press the acknowledge button.



Press the HOME button to return to HOME page or.



Press the ESC button to return to previous page.



## Roll Tarp Operation

The Roll Tarp is used to keep debris such as leaves from entering the salt tank, and when the inline heater is used to keep the salt tank from freezing.



When the Roll Tarp is not being used, it can be rolled up on the steel support pipe and rested on the supports mounted on the back, top lip of the salt tank.



The handle for operating the tarp is stored on the “J” hook. Unhook and turn handle to unroll the tarp towards the front of the salt tank.

## Roll Tarp Operation Cont.



After unrolling the tarp, the handle should be replaced on the “J” hook to store.

To open tarp, unhook handle and roll tarp back towards rear of salt tank until it rests on the supports.  
If the tarp becomes dirty, clean with mild soap and water.

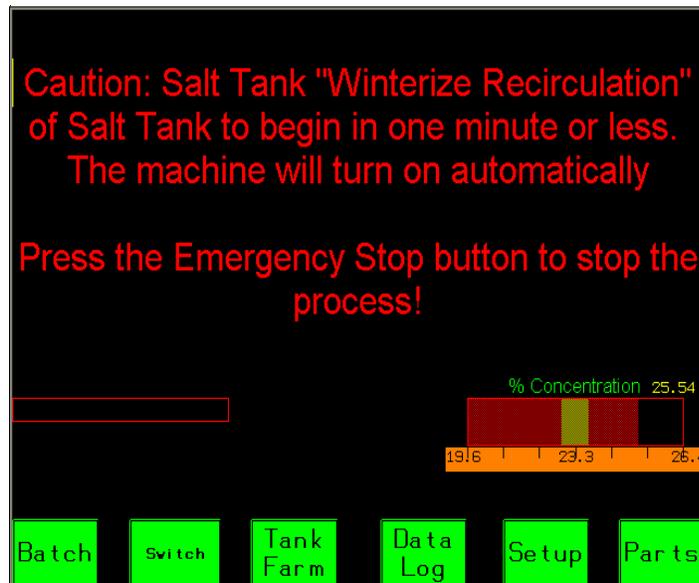
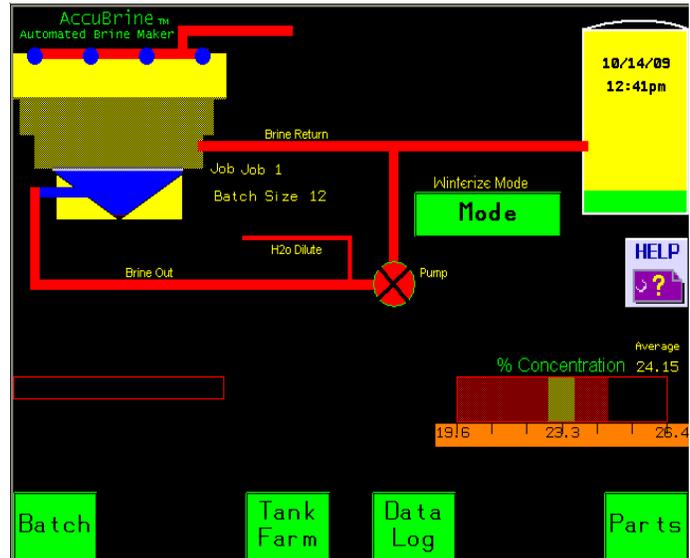
## Inline Salt Tank Heater

The Inline Salt Tank Heater is used when the liquid inside the salt tank is in danger of freezing. The heater is activated to run automatically when the Winterize Mode is selected (See Operating Mode section). The heater may be run manually as well (See Inline Salt Tank Heater Setup section).



Above the green Mode button, you will see the Winterize Mode has been activated. The preset timer to recirculate the salt tank will come begin. When the timer reaches the prescribed time, the warning below will be visible on the screen.

Before the pump turns on, a Caution will popup stating the Winterize process will begin in one minute. After one minute, the pump will start the recirculation process.



The temperature sensor for the heater will sense the liquid and if the temperature is lower than the ON temperature setting, the heater will turn on. The heater will stay on until the liquid in the salt tank reaches the preset temperature limit. After the heater turns off, the Winterize mode will resume counting down until the next cycle.

## Parts and Mechanical Items

To view the various parts on the machine (salt tank and control panel) Click on the parts button on the bottom of the HOME page. You will be directed to the Parts Selection page. Select the desired area to find the part.

### Parts

Control Panel

Remote Fill Panel (2006-2007)

Additive Inj / Remote Fill Panel (2007)

Modular Y Panel (2007 and on)

Clamps & Gaskets

**Valves**

Electric, 3 Way Bottom Load (Tank Valve)

Electric On/OffP (Water Valve, Modular)

Electric Dilute Valve

Manual Valve Position

**Pumps** **Storage Tank Parts**

Pump W/ Inlets & Outlets (close Coupled)

Pedestal Pump (200B 1/2)

Pressure Transducer Tube

Brine Tank Float Switch

Brine Tank Plumbing

**Salt Tank Parts**

Water Spray Assembly

Valve Bank Assembly

Return Assembly

Side Flush Assembly

Sump Spray Assembly

Suction Tube Assembly

Salt Tank Level Sensor

Salt Tank Drain Kit

HOME

ESC

**Part Call Out 7**  
Mfg. Part Number: M220TEE  
Mfg. : Banjo Corp.  
Cargill Part Number: BM-  
Discription: Manifold Type 2"  
Full Port Tee

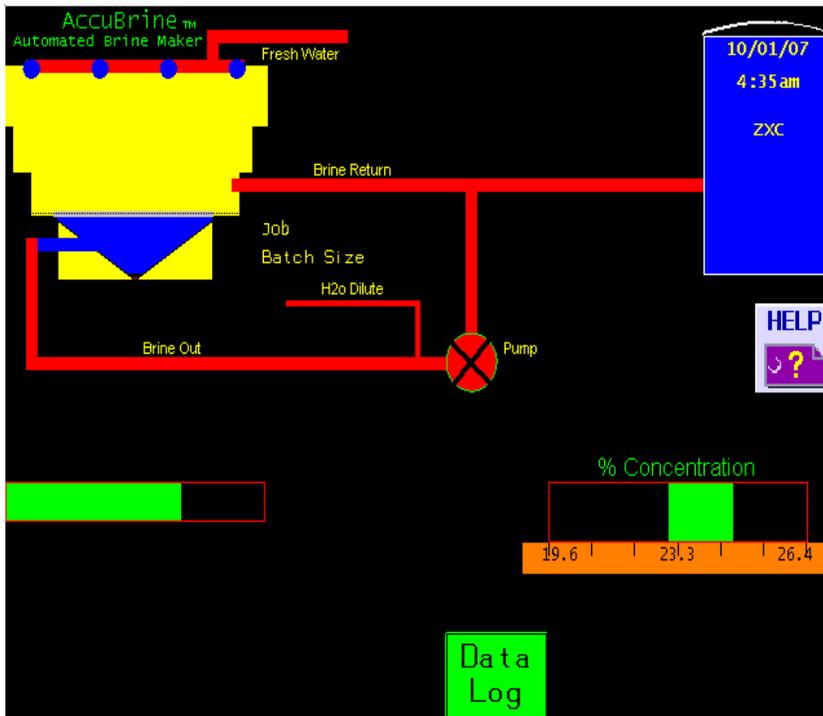
Key in Desired Call-Out for more information key in 0 to turn display Off

7

Other parts may be called up at any time. Key in the desired number from the drawing into the green box located in the lower right corner. To key in a value, touch the green box. A key pad will appear. Key in the value that corresponds with the parts diagram and press enter. The selected part will appear with a red circle around that part.

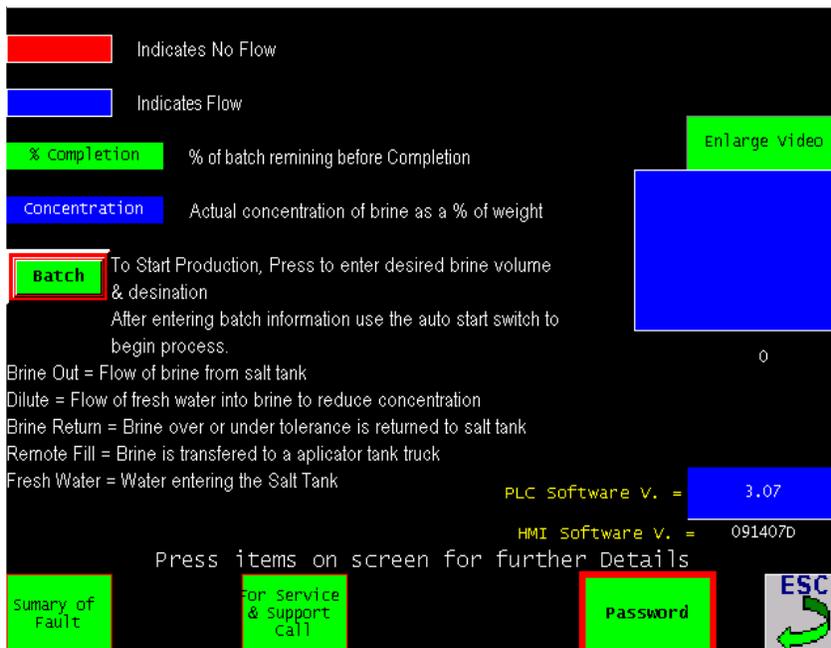
## Passwords

The system is protected by various passwords that allow different levels of function.



HOME page with 0 (Zero) as the password. Note: The only function available with password 0 activated is the data log.

To Change the password press the help button



Then Press the Password button



Key in desired password on the keypad and push enter.

### There are 4 passwords that allow different functions

Password 10: Allows for basic operation.

Password 20: Same as 10 with the added ability to Force Product from tank to tank.

Password 4096: Allows set up of machine settings.

Password 2048: Allows for set up of the Display, capturing current machine settings, retrieving data to USB port, and using video if installed.

Indicates No Flow  
  Indicates Flow  
  % Completion    % of batch remaining before Completion  
  Concentration    Actual concentration of brine as a % of weight  
Batch To Start Production, Press to enter desired brine volume & desination  
 After entering batch information use the auto start switch to begin process.  
 Brine Out = Flow of brine from salt tank  
 Dilute = Flow of fresh water into brine to reduce conce  
 Brine Return = Brine over or under tolerance is returne  
 Remote Fill = Brine is transferred to a applicator tank tru  
 Fresh Water = Water entering the Salt Tank  
 Press items on screen  
Summary of Fault    For Service & Support Call

ESC	7	8	9	←
◀	4	5	6	▶
+/-	1	2	3	clr
	0	.	Enter	

By Pressing the Password button, a key pad appears as shown. Key in desired password and press the Enter button.



Press the Escape button to go back to the HOME page.



Note: The password will revert back to 10 after 45 seconds or you return to the HOME page.

**Remote Fill Settings from Batch page with password 4096 activated**

Stop    Brine Source Salt Tank    Brine Source Storage Tank    Auto Start  
Volume    0  
Select Job  
Tank 1    Ignore Level Sensors  
 Select desired tank to fill with product    Remote Fill  
Batch Fill    Transfer & Agitate Storage    Remote Fill Lock Out    Remote Fill Activated  
 Select desired tank to fill truck from  
HOME    ESC    Tank 1    Tank 2    Additive 1    Additive 2    HELP

From the Batch page, the operator can activate the Remote Truck fill operation by pressing the Remote Fill Activated button.



To select what product to fill trucks with, select the Tank 1 - Brine, or Tank 2 - Blended Product, Additive 1 or Additive 2 tank (if installed).



To lock out the Truck fill remote switch for times when not in use and for security, press the REMOTE FILL LOCK OUT BUTTON. This will protect the system from vandalism.



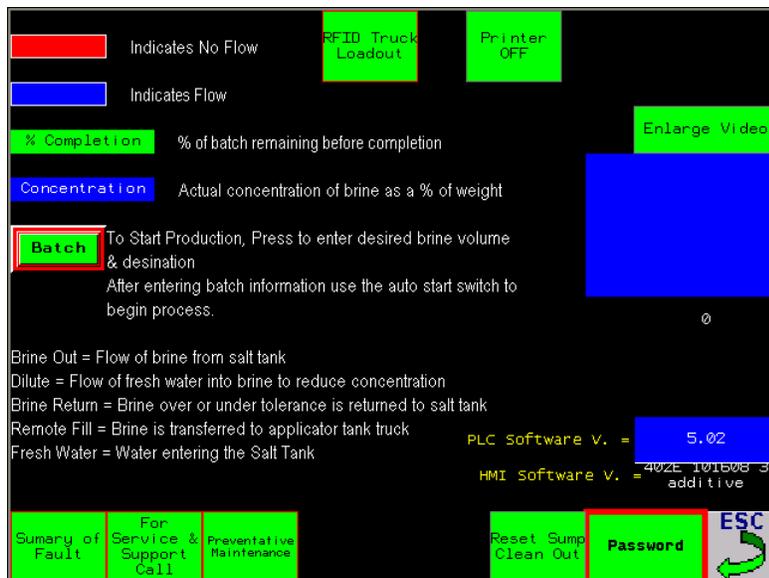
## Remote Truck Fill and RFID Setup



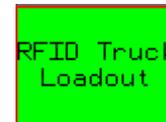
To activate the RFID system, enter password 4096 and go to the setup page 2. Press the RFID On button. It will turn red when active.



The Truck Fill and RFID system can be set up to fill trucks with or without RFID tags, deliver a specific product to the truck and a maximum volume based on which tag is used. To access the RFID set up page, enter password 4096



Press the RFID Truck Loadout button



This will bring up the RFID setup page.

## Remote Truck Fill and RFID Setup cont.

To setup the RFID page, first pass one RFID tag in front of the card reader. Two numerical values will be displayed in the blue code box.

TAG ID code	User Name	Load Out Product	Maximum Volume
1 12344	Tag 1	Brine	500
2 1	Tag 2	Brine	1000
3 1	Tag 3	Brine	1000
4 1	Tag 4	Brine	1000
5 1	Tag 5	Brine	1000
6 1	Tag 6	Brine	1000
7 1	Tag 7	Brine	1000
8 1	Tag 8	Brine	1000
9 1	Tag 9	Brine	1000
10 1	Tag 10	Brine	1000

Tag Match "ON" | Tag to product "ON" | Maximum Volume "ON" | Print | RFID Setup 11-20 | 02509581 12500 Code | ESC HOME

02509581  
12500  
Code

Press the green Tag ID code button.

TAG ID code  
1 12500

Type in the yellow code number displayed in the blue code box when the keypad pops up.

Note: The actual tag number in red is the same number written on the RFID tag.

TAG ID code	User Name	Load Out Product	Maximum Volume
1 12344	Tag 1	Brine	500
2 1	Tag 2	Brine	1000
3 1	Tag 3	Brine	1000
4 1	Tag 4	Brine	1000
5 1	Tag 5	Brine	1000
6 1	Tag 6	Brine	1000
7 1	Tag 7	Brine	1000
8 1	Tag 8	Brine	1000
9 1	Tag 9	Brine	1000
10 1	Tag 10	Brine	1000

Tag Match "ON" | Tag to product "ON" | Maximum Volume "ON" | Print | RFID Setup 11-20 | 02509581 12500 Code | ESC HOME

Press the yellow "Tag 1" to name the RFID tag just swiped. It is suggested to use the last five digits of the card number and for example, Truck #6.

User Name  
Tag 1

Load Out Product  
Brine

Press the green Load Out Product button and a selection menu will appear. Use the up and down arrows to select which product (brine, blend, additives 1 or 2) to assign to the tag just entered.

Maximum Volume  
500

Press the blue Maximum Volume button and enter a maximum volume delivered to a truck every time that card is read. When this volume is reached the pump will shut off.

## Remote Truck Fill and RFID Setup cont.

To activate or deactivate the Tag Match, Tag to Product, and Maximum Volume features. Press the buttons listed below. The buttons will turn red and switch to “On” to activate. Press again to deactivate.



Truck fill operates without RFID tag.



Truck fill operates only when an RFID tag is used and has been setup on the RFID page.



Operator must select which tank/product to deliver to the truck fill from the Batch page.



The correct product, selected earlier, is delivered to the truck fill.



Operator decides how much product to deliver to truck.

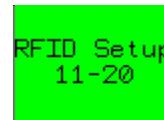


Truck fill will stop pumping when the Maximum Volume is reached.

TAG ID code	User Name	Load Out Product	Maximum Volume
1 12344	Tag 1	Brine	500
2 1	Tag 2	Brine	1000
3 1	Tag 3	Brine	1000
4 1	Tag 4	Brine	1000
5 1	Tag 5	Brine	1000
6 1	Tag 6	Brine	1000
7 1	Tag 7	Brine	1000
8 1	Tag 8	Brine	1000
9 1	Tag 9	Brine	1000
10 1	Tag 10	Brine	1000

Bottom navigation bar: Tag Match "ON", Tag to product "ON", Maximum Volume "ON", Print, RFID Setup 11-20, 12500 Code, ESC HOME

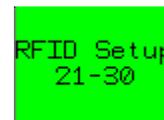
The RFID system will allow up to 40 different RFID tags to be setup. Press the green RFID Setup 11-20 button to access tags 11-20.



When this button is pressed, the next 10 tags will be available for set up.

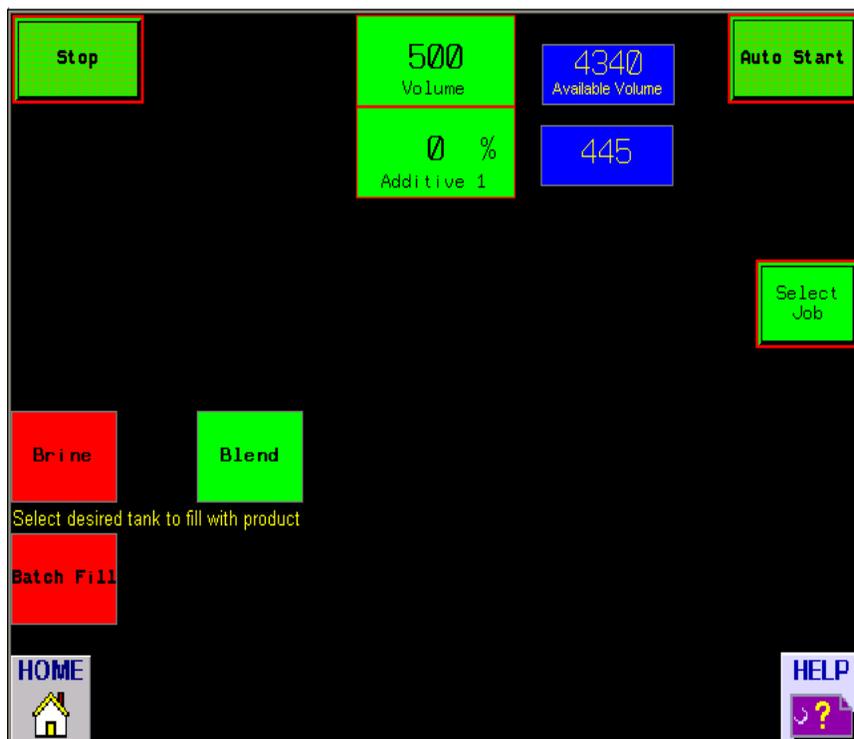
Note: All Tag ID Code positions must have a 1 in the green box if a tag code is not entered.

TAG ID code
1 12344
2 1
3 1



## Producing a Blended Product Batch

A blended product is a custom mix of another additive(s) in conjunction with the salt brine.



Enter the desired total quantity of Blended Product to produce by pressing the Total gallons button.

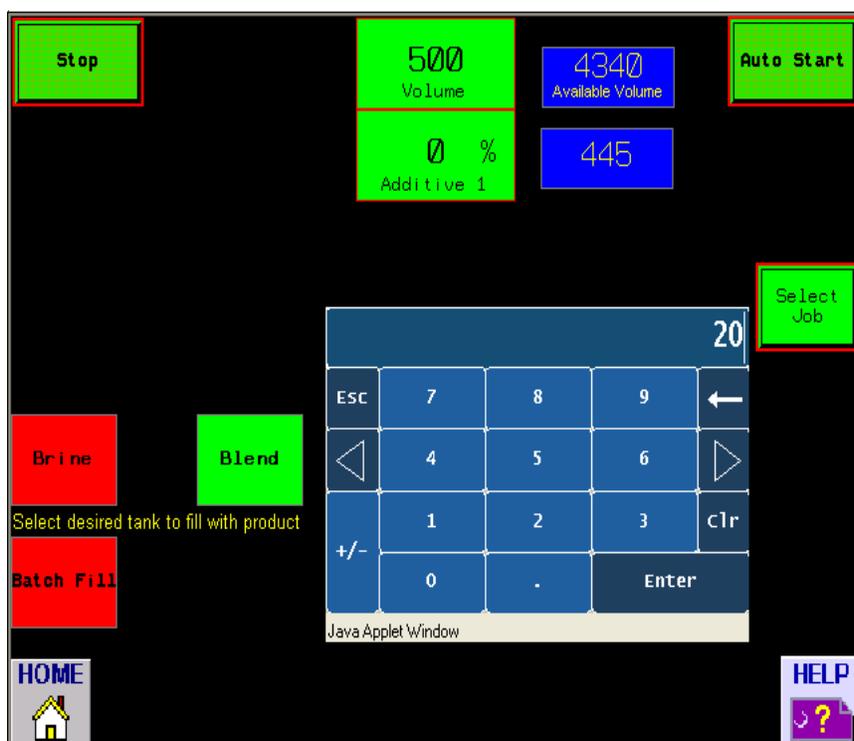


A key pad will appear. Key in numeric value of product to produce then press the ENTER BUTTON.



## Desired Ratio of Additive

To select the desired ratio of Additive as a percent of total product to add to the brine, press the % Additive button

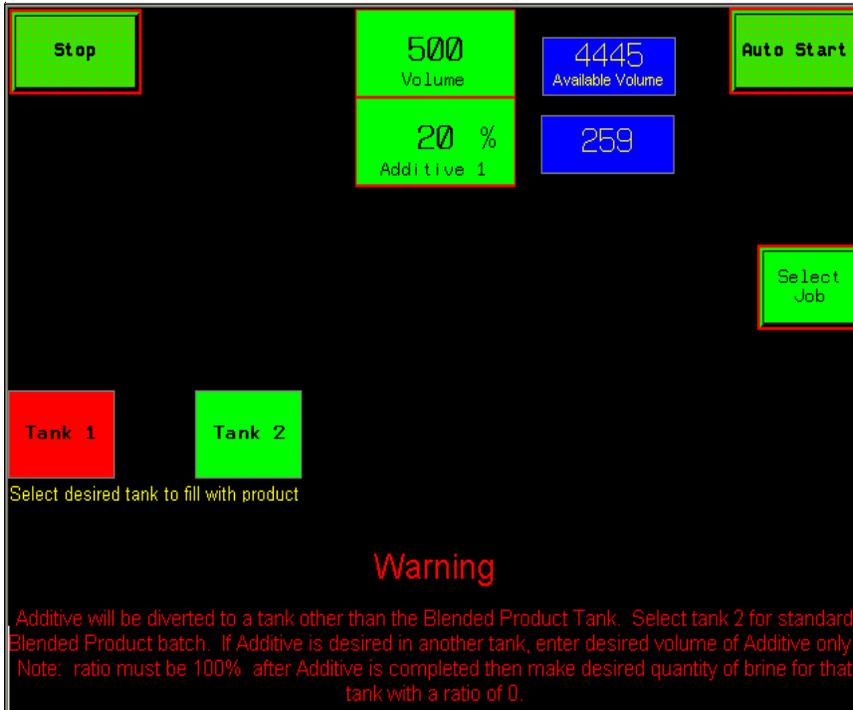


Enter a numeric value to represent desired additive ratio (% of total volume).

Enter a Value between 0-100, for example for 20% additive and 80% brine, key in 20.

Press the ENTER BUTTON



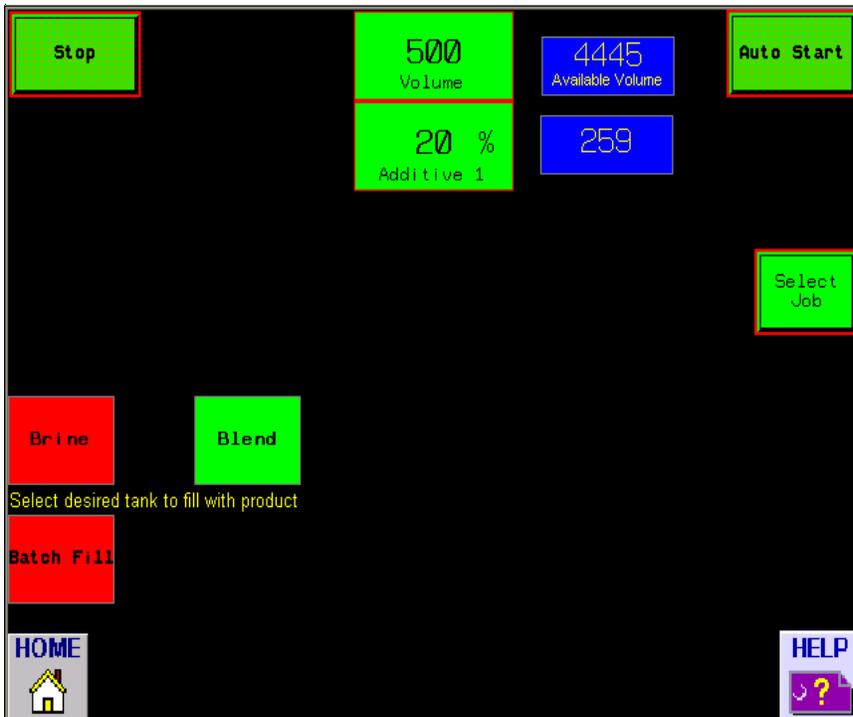


Tank 2 will always be the Blended Product tank mixing vessel. If an additive Ratio is between 1-100% & tank 1 is the selected tank then a warning will appear as shown to inform to switch to the Blended Product tank or tank 2.

To change to tank 2 for a Blended Product batch press the Tank 2 button.



The button will turn red and the warning will disappear.



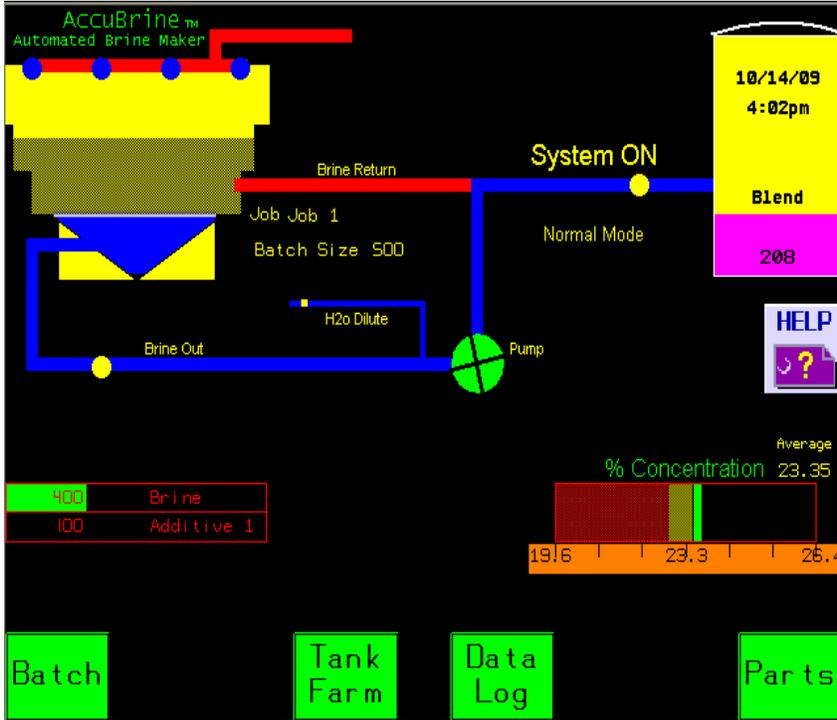
The information in the blue box is information as it relates to a Blended Product.



The value to the right of the Volume button is the available volume in tank 2. This is the maximum quantity of material that may be produced before the tank will overflow.



Is the quantity of Additive available in the Additive storage tank.



Press the Auto Start button



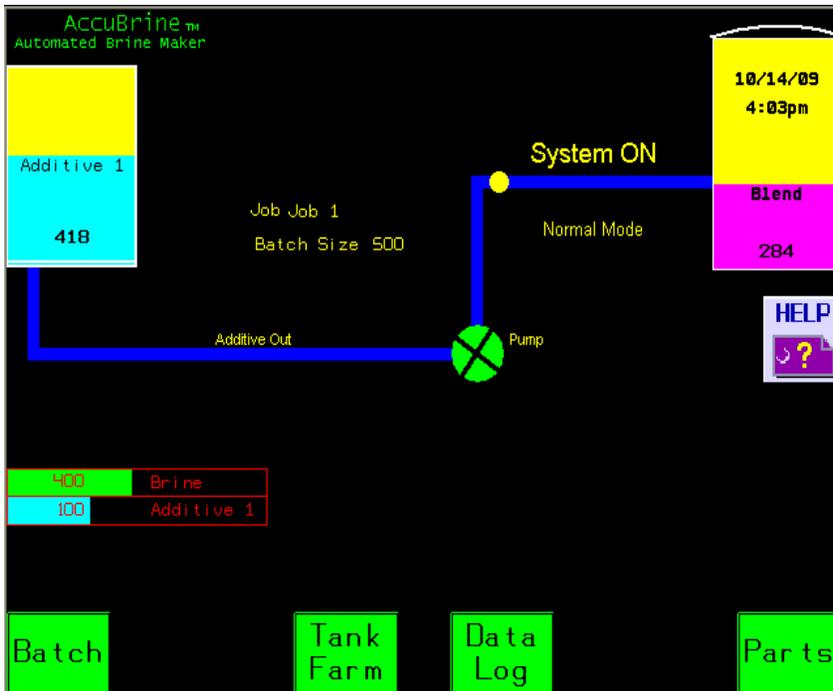
The machine will calculate the correct quantity of material to be produced given the total volume and Ratio and each will be displayed in the progress graph below.



Graph showing brine being produced.

In this example: A batch of 500 units was entered with a ratio of 20%. The machine calculates the quantity of each material to produce, 400 units of brine and 100 units of Additive will be mixed to produce a Blended Product.

The machine will first produce 1/2 of the desired brine, from the above example 200 units / 2 = 400 units and then add 100 units of Additive 1 then add the remaining 200 units of Brine.



The graphics change on the display as the additive is being added to the Blended Product tank.

## Non Standard Blend and Brine Batch Production

The Brine storage tank may be used to store a Blended product.

**Warning**

Additive will be diverted to a tank other than the Blended Product Tank. Select tank 2 for standard Blended Product batch. If Additive is desired in another tank, enter desired volume of Additive only. Note: ratio must be 100% after Additive is completed then make desired quantity of brine for that tank with a ratio of 0.

If it is desired to put Blended product into the Brine tank, select tank 1, a warning will appear (as shown on left).

It is not possible to produce a standard Blended Product between 1 - 99 % and divert to Tank 1. You must select 100% additive, and a volume then press Auto Start. You can then produce a Brine batch into the Brine tank to produce the nonstandard blended product.

AccuBrine™  
Automated Brine Maker

06/04/08  
1:09pm  
Brine

System ON

Job Job 1  
Batch Size 500

Additive  
4950

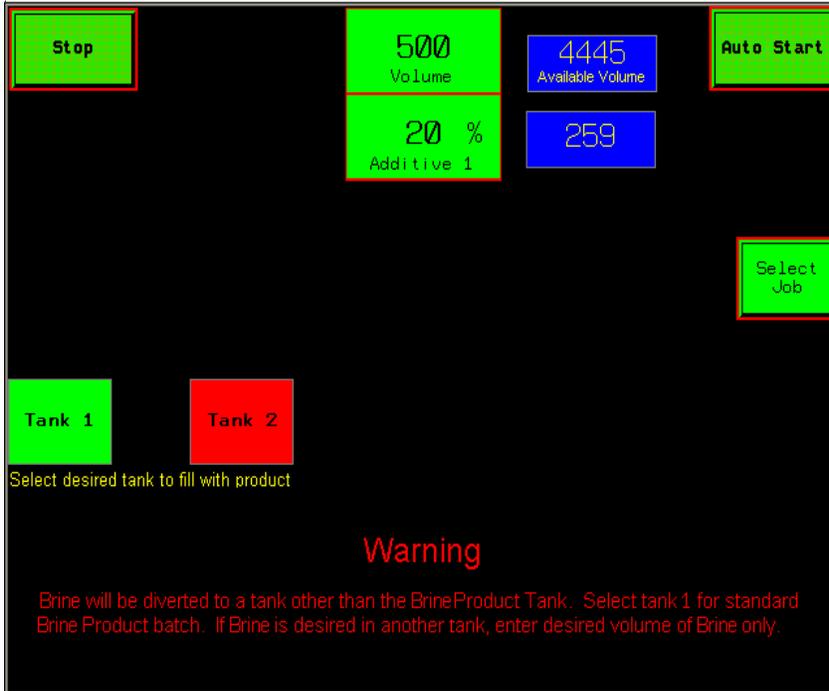
Additive Out

Pump

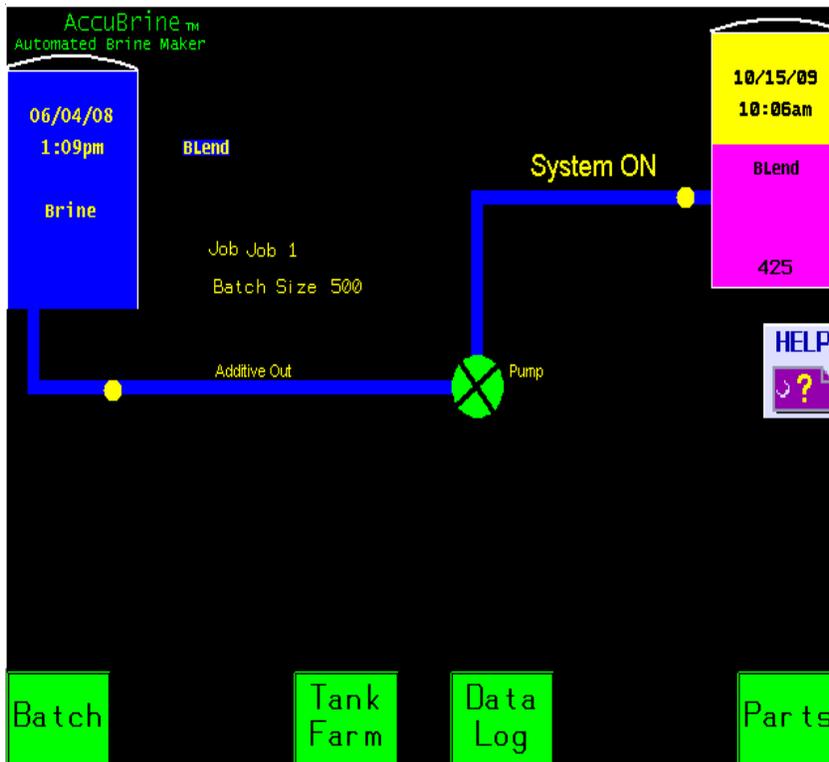
HELP

Batch Tank Farm Data Log Parts

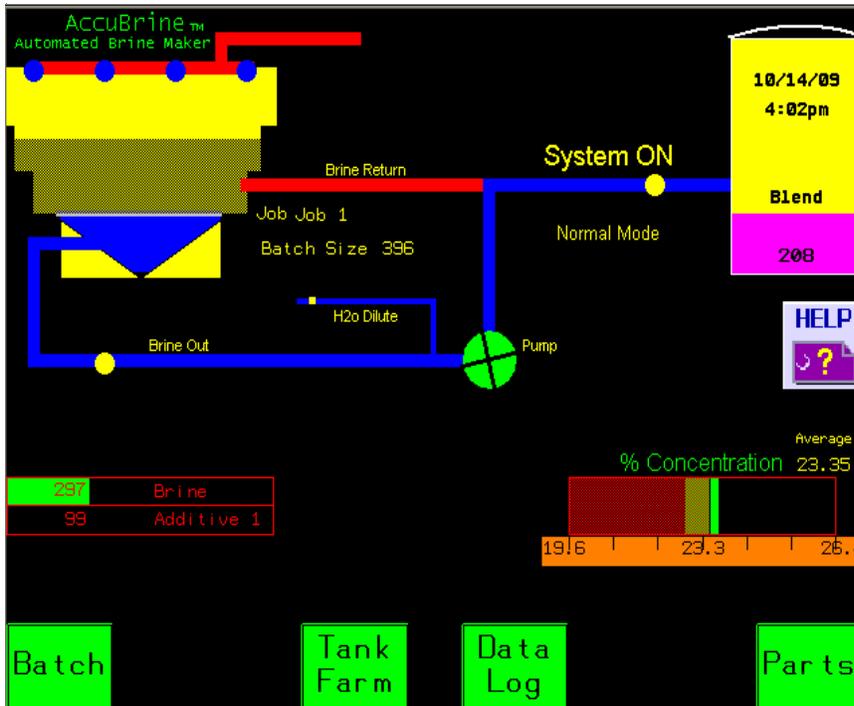
The illustration to the left shows that 100% additive is flowing to the Brine Storage tank.



If it is desired to put Brine product into the Blended tank, select tank 2 and warning will appear (as shown on left). To continue, press the start button and brine will be sent to tank 2

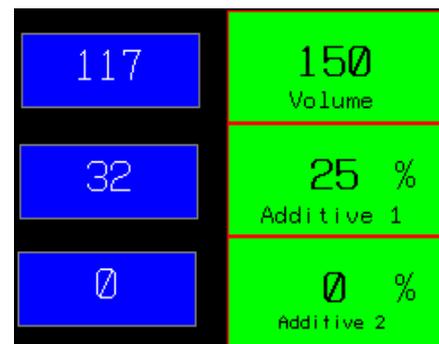
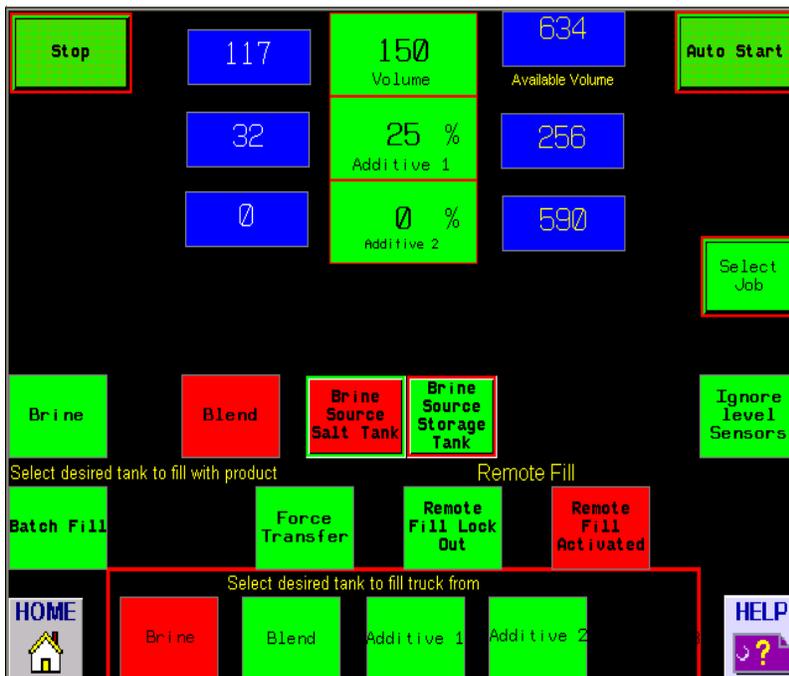


The illustration to the left shows that 100% Brine is flowing to the Blended Product storage tank.



**Premature Shut down** If a Blended Product batch is stopped prior to completion due to a machine fault or operator interference, the machine will inform on the batch page, as to the new batch size and ratio required to complete the last incomplete batch. To resume the batch, go to the batch page and key in suggested batch size and ratio and restart batch.

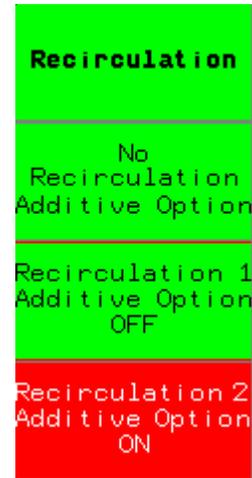
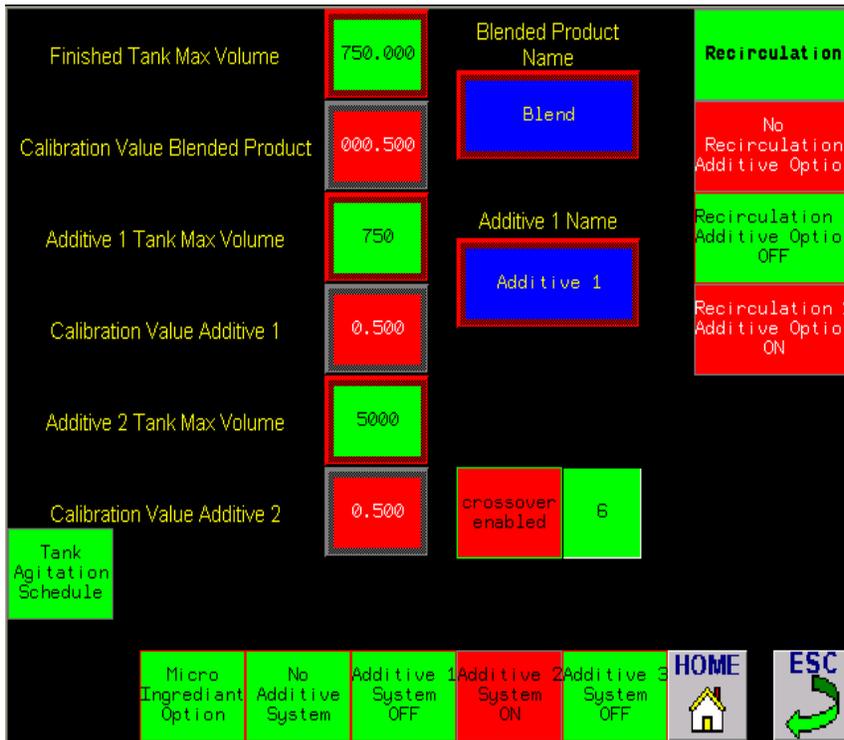
For example: A batch of 150 units was started at 25% ratio of additive 1 and the operator turned the machine off prior to completion.



To finish the incomplete batch, the new volume will be 117 units at 32% ratio. When this new batch size is completed, the original batch of 150 units at 25% ratio will be complete.

## Additive System Recirculation

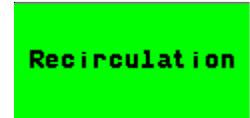
To set up the additive system to recirculate product tanks, go to set up page 3.



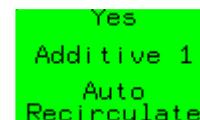
To activate the recirculation for an additive, select the Recirculation 1 additive or Recirculation 2 additive button.

The recirculation for Additive 2 has been activated in the illustration above.

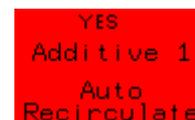
To set up the “ON” time and “OFF” time for storage tank recirculation, press either the Tank Agitation Schedule or Recirculation buttons.



Select which storage tank to recirculate.



The button will turn red and turn to “ON”.



Touch the Hours Off and Minutes On buttons to set up the recirculation schedule for each tank desired. The example to the right shows the storage tank will recirculate for 20 minutes every 24 hours. If multiple tanks are scheduled, one tank will recirculate and then continue with the next tank.

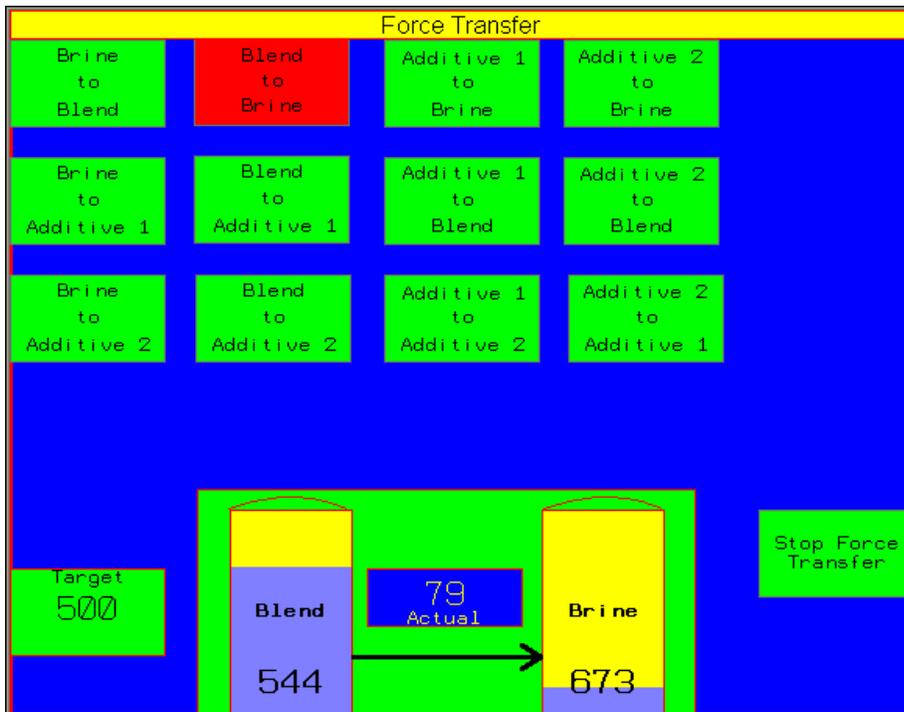


To recirculate a storage tank manually, touch the Manual Recirculate button. The recirculation will continue until the Stop Manual Recirculation button is pressed or the Remote Truck fill switch is activated.



### FORCE TRANSFERS OF LIQUIDS

To move liquids between storage tanks, such as brine to blended product, go to the Force Transfer page with password 4096 active.



Press the Batch button.



Press the Force Transfer button.



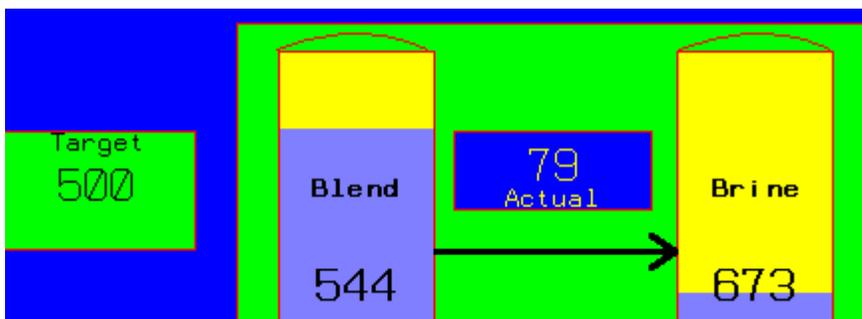
Select the button that corresponds to the liquids you want to transfer.



Press the Target button and enter the volume of liquid to transfer.

In this case, 500 gallons of Blend product is being transferred to the Brine storage tank.

Press the Start Transfer button to begin the liquid transfer.



Press the Stop Transfer button if you want to stop the transfer. Starting a batch or operating the truck fill will also stop the transfer.



## Recycled Water Setup

This machine has the capability (if installed) to use a recycled water and fresh water supply to dissolve the salt to produce brine. The three way electrically actuated valve and auxilliary pump is controlled by the Control Panel to use the recycled water until the volume in the storage tank reaches a user defined minimum level. The actuated valve then changes position to allow fresh water to continue the brine making process.

To access the Recycled Water tank settings, enter password 4096, press the Tank Farm button on the Home page.



Recycle Water

Press the Recycle Water button to ACTIVATE and set storage tank calibration, and minimum volume levels.

Min Level

Press the Min Level button to set the low liquid level. This value will leave enough liquid in the tank to prevent the pump from running dry before the control panel switches to the fresh water source. When the liquid level in the recycled water storage tank is above this Min level, the recycled water will be used.

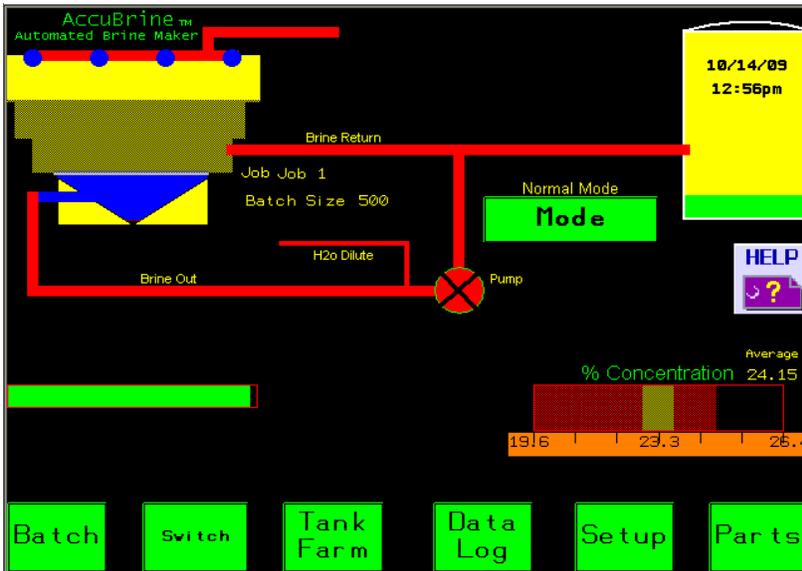
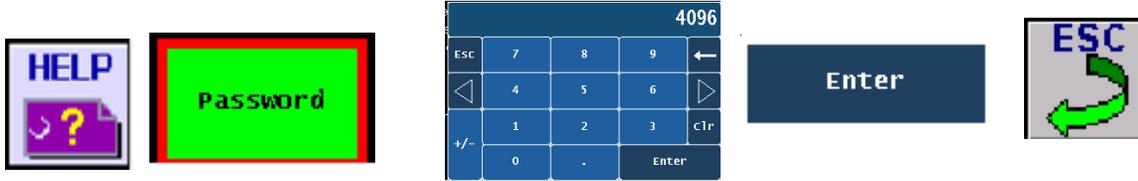
Press this green button to enter the tanks maximum volume. The keypad for the Recycled Water tank will be displayed. This value should be approximately 5 percent less than the tank capacity.

Press this green button to enter the calibration value. This value correlates the liquids pressure being read by the transducer to volume. The value can be moved up or down to reflect actual tank volume.

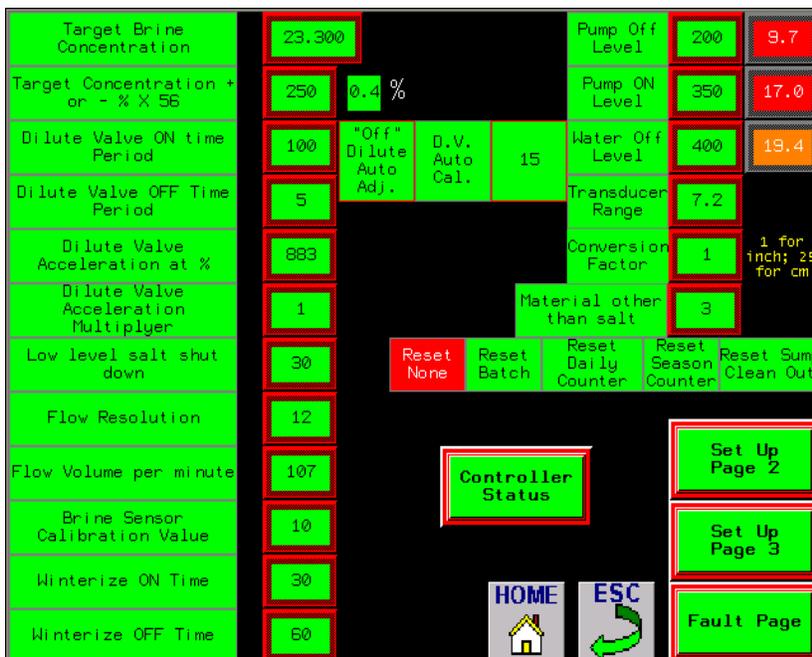
The Recycled Water tank setup is now complete. The brinemaker will use recycled water when the level is above the Minimum volume and revert to the fresh water source when below the Minimum volume.

## Machine Set Up Page 1

To access Set Up page from the HOME page, press HELP then press ENTER PASSWORD, key in password of 4096 then press ENTER then press ESC to go back to the HOME page. The Set Up button will be at the bottom of the page.



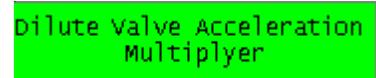
Press the SETUP button to access set up page 1.



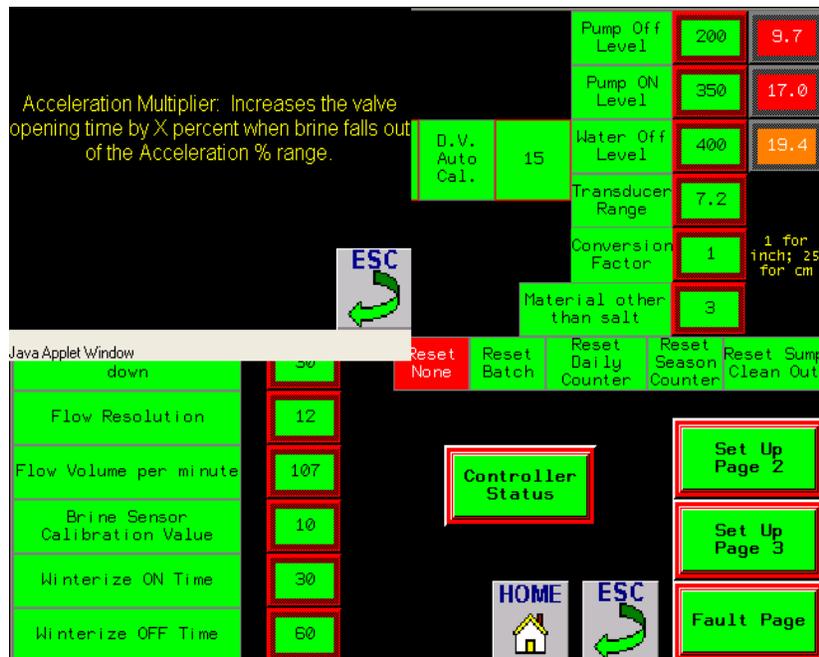
## Set up page 1

Page 1 set up has basic machine settings for brine production only.

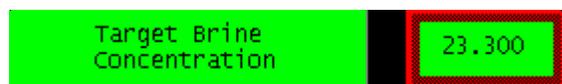
By pressing the green text button by each setting, a description of the setting appears. Press the Dilute Valve Acceleration Multiplier button below for an example.



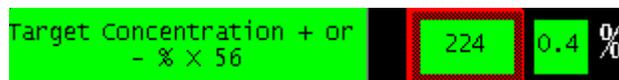
Machine Set Up Page 1 Cont.



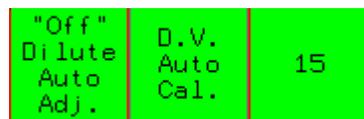
A popup window describing the Dilute Valve Acceleration Multiplier appears.



**Target Brine Concentration:** This setting is the desired target concentration of the salt brine. Set this to the concentration that is desired. Units are in % salt divided by % total weight.



**Target concentration + or -:** Concentration of brine that is considered acceptable. By changing the value in the red box, the corresponding number to the right changes. The value + or - is 1/2 of the overall percentage therefore, if the values are 224 and 0.4% and the target concentration is 23.3%, the acceptable brine would be 23.3% + or - .2% or 23.1 to 23.5% concentration by weight.



**Dilute Valve Auto Adjust:** This setting is used to automatically adjust the dilute valve to regulate brine concentration. This function OVERRIDES the Dilute Valve “ON”, Dilute Valve “OFF”, Dilute Valve Acceleration, and Dilute Valve Multiplier settings.

**15** Press the far right green button and enter a value that determines the number of clicks it takes for the valve to fully open. In this case, 15 clicks will open the valve fully. This is the factory setting.

**D.V. Auto Cal.** Press the middle green button to start the “Auto Calibration” of the dilute valve. The valve will self calibrate until the valve opens in 15 clicks.

## Machine Set Up Page 1 Cont.

"Off"  
Dilute  
Auto  
Adj.

Press the "OFF" Dilute Auto Adj. green button to ACTIVATE the "Auto Adjust" feature of the dilute valve. This will OVERRIDE the Dilute Valve "ON", Dilute Valve "OFF", Dilute Valve Acceleration, and Dilute Valve Multiplier settings.

"ON"  
Dilute  
Auto  
Adj.

This button will turn red when the feature is activated.

Dilute valve ON time  
Period 70

**Dilute valve on time Period:** Adjust the speed of which the dilute valve adjusts itself. The higher the value the faster it opens. Lower values slow the valve down. This is a critical setting and should be custom fit to the machine. Over time this value may need to be changed to adjust for wear on the machine. If the value is too high, the concentration of the brine will begin to hunt over and then under the specified concentration. If the value is too low, the dilute valve may never open. Note: depending on the speed of the valve, this number may be between 5 and 100. Units are in milliseconds.

Dilute valve OFF Time  
Period 5

**Dilute Valve Off Time Period:** This value is the amount of time after an adjustment of the dilute valve before it adjusts itself again. Setting this value to high, the process will become slow. Setting the value to low can cause the machine to hunt. Units are in seconds, suggested values 2-5.

Dilute valve Acceleration  
at % 833

**Dilute valve Acceleration at %:** Is the deviation from the concentration where the dilute valve will increase speed if the concentration is outside of this tolerance. For example: If the target concentration is 23.3% and the deviation is 833 then the valve would increase speed if the actual concentration is  $(833/56)$  therefore  $23.3\% \pm 1.4\%$  (56 units moves .1%). Setting this value to low will make the machine hunt.

Dilute valve Acceleration  
Multiplier 1

**Dilute Valve Acceleration Multiplier:** This value speeds up the valve by \_\_\_ times to speed the valve up if the concentration is outside of tolerance + or - .

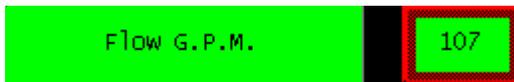
Adjust this setting to 1 if the valve speed is fast and it may be raised to 2 if the valve speed is very slow.

Adjusting this value above 1 can cause hunting, however if fine tuned correctly can make the machine ramp up more rapidly.

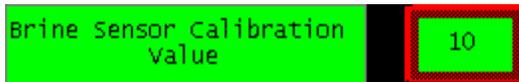
Low level salt shut down 30

**Low Level Shut Down:** Is the amount of time before the machine shuts down if minimum concentration is not met. Time value is in minutes set between 10 & 30.

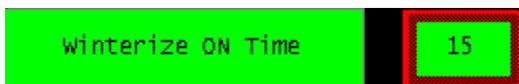
Machine Set Up Page 1 Cont.



**Flow Volume:** Flow rate is the units per minute that the machine is producing in a brine only (non-Blended Product) going to Tank 1 or (brine storage tank). Upon initial calibration, set at 107 for units without modular panel set at 90 for units with modular panels. If amount produced is less than actual, lower the value. If amount produced is more than actual, raise the value.



**Brine Sensor Calibration Value:** This is a correction value for the conductivity analyzer. If actual brine concentration is weaker than the machine indicates, lower the value. If concentration is stronger than target, raise the value. Base line setting is 10 (value of 10 there is no correction).



**Winterize ON Time:** Is the amount of time that brine is recirculated between the control panel and the salt tank. Value is in Seconds.



**Winterize Off Time:** Is the amount of time between recirculating cycles (Winterize ON Time). Value is in Hours.



**Salt Tank Water Level:** These values determine the point at which the pump turns On and Off, and controls the water level in the salt tank. The values in red represent the water level in inches above the sensor on the salt tank. Select each green button for description of function.

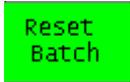
**Pump off level:** This is the low level limit. Adjust this to protect the pump from running dry. Value normally will be 6-10” or 14.5 - 24.0 cm if conversion factor was set to 25.

**Pump on Level:** This is the level where the pump turns on. This value must be higher than Pump Off Level. For systems with high flow, a value of around 14” is a good starting point..

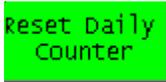
**Water Off Level:** Adjust the maximum quantity of water that will be added to the salt tank. Keeping this value low will reduce overflow when adding salt. This value must be greater than Pump on level.

**Conversion Factor:** Select 1 for standard measurements in inches, or select 25 for metric measurements in centimeters.

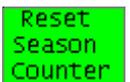
## Machine Set Up Page 1 Cont.



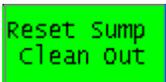
Reset Batch: Resets the batch size to zero. Use this if that machine locks up and a batch size can not be entered.



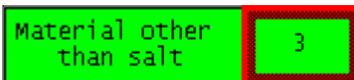
Reset Daily Counter: Resets the current activated data log or Job size to zero. Each job must be selected and reset individually.



Reset season Counter: Resets the current activated data log or Job size to zero. Each job must be selected and reset individually.



Reset Sump Clean Out: Resets the warning on the salt tank and the full sump indicator turns from red to blue to indicate a clean sump. Press this button and reset after clean out of the salt tank.



Material Other Than Salt: This setting calculates the theoretical amount of sediment in the salt tank. Estimate the amount of foreign material in the salt and key the value as a percentage in here. The lower the value the less often the salt tank will need to be cleaned.

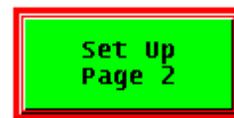


Transducer Range: This setting is the maximum pressure reading on the transducer located on the salt tank. Units are in PSI. Standard reading is 7.2.

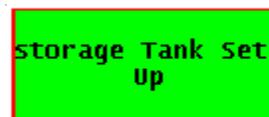
## Machine Set Up Page 2

- Storage Tank Set Up
- Remote Truck Fill
- Air purge
- Forcing main control panel valves & pump
- Inline Salt Tank Heater
- Controller Status
- Accumulated Production

From setup page 1, select the Setup Page 2 button..



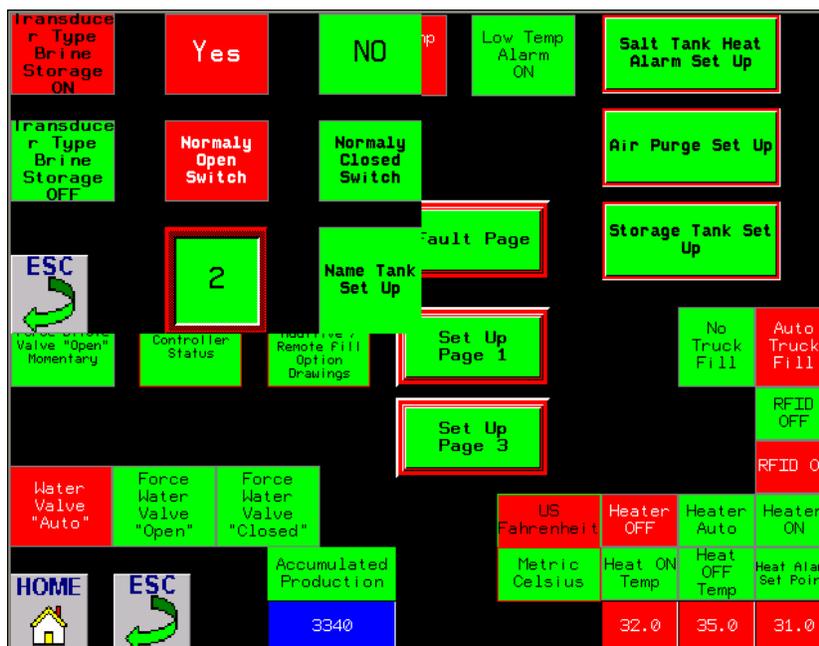
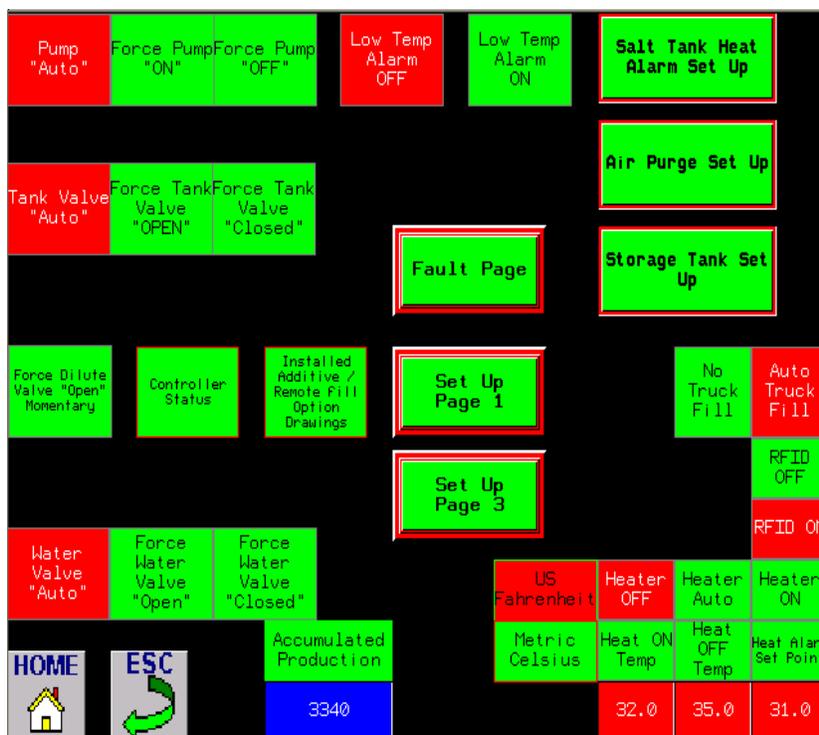
Press the Storage Tank Setup button to view tank setup page.



Press the Number of Tanks button and enter the number of installed storage tanks with pressure transducers on the key pad and press enter.

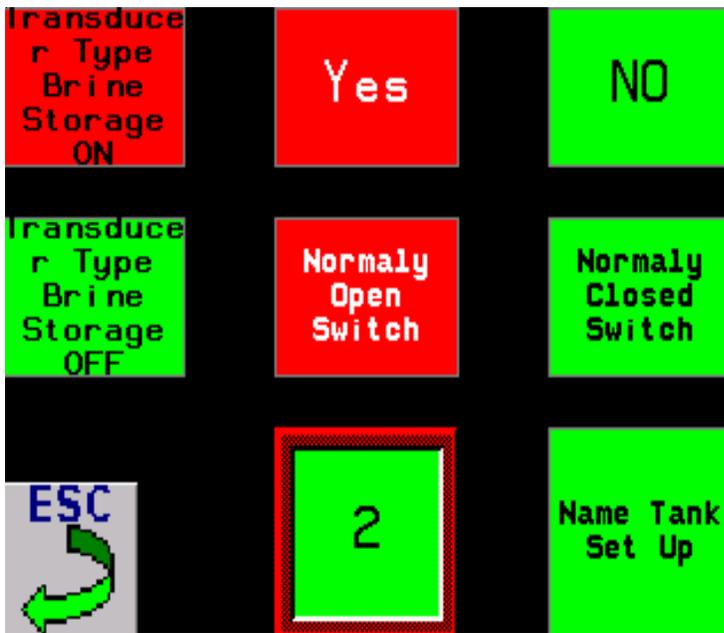


Press the Transducer Type-Brine Storage On button to select pressure transducer for the brine storage tank.

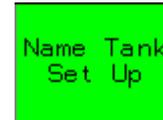


Activating this button overrides the Normally Open or Closed buttons used for a float switch.

Machine Set Up Page 2 Cont.



Press the Name Tank Set Up button and enter the name for each installed tank on the keyboard and press enter..



Key in the desired name for each storage tank. Note: with an additive injection system the default name of Tank 1 is dedicated to Brine and Tank 2 is dedicated for Blended Product. Name the tanks appropriately. For example Tank 1 (default name) to Brine 6,000 Gal & Tank 2 (default name) to Blended Product 80/20 6000Gal.

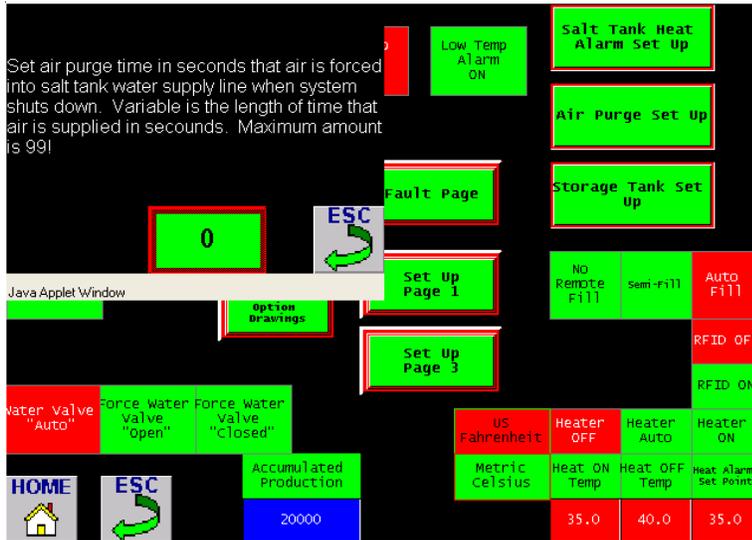


**Remote Truck Fill Option:** If Remote Truck fill is installed, Select the Auto fill button to activate the appropriate programming and functionality for the Remote Truck fill feature.

## Machine Set Up Page 2 Cont.

### Air Purge Setup

This is used to set the amount of time that the air purge will open the solenoid valve to purge the water line between the control panel and the salt tank. *Units are in seconds.* The Air Purge activates each time the machine is shut down. It is recommended to have approx. 90 psi and a 1/2" unrestricted supply.



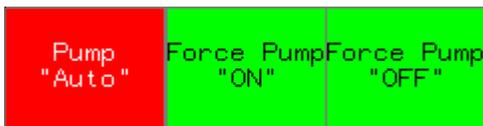
Select the Air Purge Setup button.



Enter a value, in number of seconds for the Air Purge to stay on. Increase number if fresh water hose does not purge enough of the water.



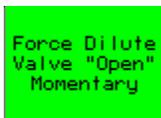
**Forcing Operation:** This should only be done for trouble shooting or for manually overriding the machine for non standard operation such as troubleshooting a valve. Under normal operation, the Auto button should be Red. To move liquids, the machine must be running then press the desired force button. When the machine is stopped or started, the forcing buttons will be reverted back to AUTO. **Forcing valves or pump may damage machine and / or cause machine to operate erratically.**



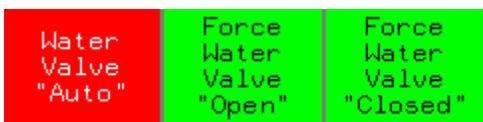
**Force pump on:** Forces the pump to run regardless of machine operation and liquid level in the system.



**Force Tank Valve Open:** Forces the tank valve open to divert flow to the storage tank in a standard machine. With the modular panel, it forces product to the modular manifold outlet bank.



**Force Dilute valve:** Opens the dilute valve momentarily as long a button is pushed. This will allow fresh water to enter into the pump inlet and into salt tank and /or output flow.



**Force water Valve:** Forces the water valve open to allow fresh water flow to the Salt tank.

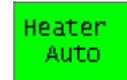
## Machine Set Up Page 2 Cont.

### Inline Salt Tank Heater Setup

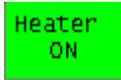
To access the settings for the Inline Salt Tank Heater, enter password 4096 and go to setup page two.



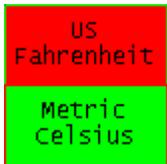
Select "Off" if heater is not installed.



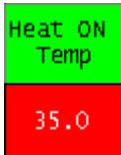
Select "Auto" if heater is installed and it is desired to have heater turn on automatically as needed via thermostat in Winterize Mode.



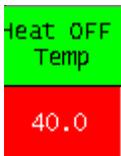
Forces the Heater ON. "Caution must be used". The liquid inside the heater must be recirculating to prevent overheating and possible damage.



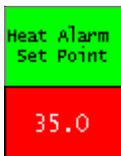
Select the U.S. Fahrenheit or Metric Celsius button based on the machines wiring diagram and which input is used for the thermostat. Input 0 is for Fahrenheit, and Input 1 is for Celsius.



**Heat On Temp:** Is the Temperature at which the heater will be turned ON if HEATER AUTO is selected. *Touch the red numeric value to adjust the setting.*



**Heat OFF Temp:** Is the Temperature at which the heater will be turned OFF after it has been turned on (from above), if HEATER AUTO is selected. The heater turns on at the set point above and will heat the liquid until it reaches this point. Note: If AUTO is selected, this value must be greater than the ON setting. *Touch the red numeric value to adjust the setting.*



**Heat Alarm Set Point:** This is the point at which an alarm will illustrate the low temperature warning on the salt tank. Set this value at or below the ON temperature.

## Machine Set Up Page 2 Cont.

The Controller Status page displays information about the status of valves, pressure transducers, pump, and other systems on the brinemaker. It can be used as a tool to troubleshoot these items as well as view operational information and force valves open.

Red = True, Blue = False

Output On or off      Valve Open

Function (PLC output) ● ● ●

Valve closed

Flow Switch (I 0.0)	●	Recycled Water Pump & Valve (Q0.0)	●	Normal
E-Stop (I 0.1)	●	Air Purge (Q0.1)	●	Normal
Pump Overload (I 0.2)	●	Water Valve (Q0.2)	● ● ●	Normal
Start Switch (I 0.3)	●	Dilute Valve Open (Q0.3)	● ● ●	Force Dilute Power Position
Remote Truck Fill (I 0.5)	●	Tank Valve (Q0.4)	● ● ●	Normal
Walchem Fault (I 0.8)	●	Dilute Valve Power (Q0.5)	● ● ●	Force Dilute Power & Position
		Run Fault (Q0.6)	●	Normal
		Pump (Q0.7)	●	Normal
		Salt Tank Suction Valve (%Q3.0)	● ● ●	Normal
		Source Add 1 Valve (Q3.1)	● ● ●	Normal
		Source Blend Storage Valve (Q3.2)	● ● ●	Normal
		Source Brine Storage Valve (Q3.3)	● ● ●	Normal
		Source Add 2 Valve (Q3.4)	● ● ●	Normal
		Source additive 3 Valve (Q3.5)	● ● ●	Normal
		Destination Brine Storage V. (Q3.6)	● ● ●	Normal
		Destination Blended Prod. V. (Q3.7)	● ● ●	Normal
		Destination Truck Fill Valve (Q3.8)	● ● ●	Normal
		Destination Add 1 Valve (Q3.9)	● ● ●	Normal
		Destination Add 2 Valve (Q3.10)	● ● ●	Normal
		Destination Add 3 Valve (Q3.11)	● ● ●	Normal
		Micro Pump (Q3.12)	● ● ●	Normal
		Heater (Q3.13)	● ● ●	Normal
		Pilot Lamp (Q3.14)	● ● ●	Normal
		Aux (Q3.15)	● ● ●	Normal

Walchem Unit 1.0	3094
Salt Tank Lev. Sensor 1.1	711
Brine Storage 1.2	216
Recycled Water 1.3	0
RFID Digital Display (Q1.0)	0
Blended Product 4.0	203
Additive 1 4.1	889
Additive 2 4.2	1129
Additive 3 Tank 4.3	0
Aver. Brine Concen.	23.15

Output On or off      Valve Open

Function (PLC output) ● ● ●

Valve closed

Walchem Unit 1.0	3094
Salt Tank Lev. Sensor 1.1	711
Brine Storage 1.2	216
Recycled Water 1.3	0
RFID Digital Display (Q1.0)	0
Blended Product 4.0	203
Additive 1 4.1	889
Additive 2 4.2	1129
Additive 3 Tank 4.3	0

The legend shown at left describes the color indicators and their meanings.

The table to the left shows output numbers for pressure transducers and the conductivity analyzer. The numbers are from 0 to 4095 (full scale) representing the 4 to 20 milliamp reading from each item. For example: The 1129 for the Additive 2 Tank means that the output is about one quarter of full scale and the tank should be approximately one quarter on the HMI touch screen. The items reading zero are either: not installed, installed incorrectly (wiring), have no liquid in the storage tank, or have failed.

Machine Set Up Page 2 Cont.

The screenshot displays a control panel with the following elements:

- Legend:** Red = True, Blue = False. A diagram shows a red dot for 'Valve Open' and a green dot for 'Valve closed'.
- Input/Status Indicators (I):**
  - Flow Switch (I 0.0) - Red
  - E-Stop (I 0.1) - Red
  - Pump Overload (I 0.2) - Red
  - Start Switch (I 0.3) - Red
  - Remote Truck Fill (I 0.5) - Red
  - Walchem Fault (I 0.8) - Red
- Output/Valve Indicators (Q):**
  - Recycled Water Pump & Valve (Q0.0) - Red
  - Air Purge (Q0.1) - Red
  - Water Valve (Q0.2) - Red
  - Dilute Valve Open (Q0.3) - Green
  - Tank Valve (Q0.4) - Red
  - Dilute Valve Power (Q0.5) - Green
  - Run Fault (Q0.6) - Red
  - Pump (Q0.7) - Red
  - Salt Tank Suction Valve (%Q3.0) - Red
  - Source Add 1 Valve (Q3.1) - Red
  - Source Blend Storage Valve (Q3.2) - Red
  - Source Brine Storage Valve (Q3.3) - Red
  - Source Add 2 Valve (Q3.4) - Red
  - Source additive 3 Valve (Q3.5) - Red
  - Destination Brine Storage V. (Q3.6) - Green
  - Destination Blended Prod. V. (Q3.7) - Red
  - Destination Truck Fill Valve (Q3.8) - Red
  - Destination Add 1 Valve (Q3.9) - Red
  - Destination Add 2 Valve (Q3.10) - Red
  - Destination Add 3 Valve (Q3.11) - Red
  - Micro Pump (Q3.12) - Red
  - Heater (Q3.13) - Red
  - Pilot Lamp (Q3.14) - Red
  - Aux (Q3.15) - Red
- Force Indicators:**
  - Force Dilute Power Position (Green)
  - Force On (Red)
- Numerical Values:**
  - Walchem Unit 1.0: 2968
  - Salt Tank Lev. Sensor 1.1: 713
  - Brine Storage 1.2: 215
  - Recycled Water 1.3: 0
  - RFID Digital Display (Q1.0): 0
  - Blended Product 4.0: 203
  - Additive 1 4.1: 890
  - Additive 2 4.2: 1125
  - Additive 3 Tank 4.3: 0
  - Aver. Brine Concen.: 23.15
- Navigation:** ESC HOME buttons.

Destination Brine Storage V. (Q3.6) ●●● Normal

To force a valve open and check for proper operation, touch the green NORMAL button for the valve you want to open.

Destination Brine Storage V. (Q3.6) ●●● Force On

The button will turn red and state FORCE ON. The CLOSE indicator has changed from green to red indicating the valve has opened.

Aver. Brine Concen. 23.15

The Average Brine Concentration indicator shows the concentration of the brine produced per batch. It will reset and begin again with each new batch.

## Set Up Page 3

Additive systems  
Storage Tanks  
Cross Over

Micro Ingredients  
Recirculation / Tank Agitation

Finished Tank Max Volume	750.000	Blended Product Name	Recirculation
Calibration Value Blended Product	000.500	Blend	
Additive 1 Tank Max Volume	750	Additive 1 Name	
Calibration Value Additive 1	0.500	Additive 1	
Additive 2 Tank Max Volume	5000		
Calibration Value Additive 2	2.500	crossover enabled	6
Tank Agitation Schedule			
		Micro Ingredient Option	No Additive System
		Additive System OFF	Additive 2 System OFF
		HOME	ESC

Press to select the appropriate button below to activate a 1 additive, or 2 additive system.

Additive 1 System OFF	Additive 2 System OFF
-----------------------	-----------------------

Select the No Additive System button if there is not an additive system installed.

No Additive System
--------------------

## Storage Tank Setup

Finished Tank Max Volume	750.000
Calibration Value Blended Product	000.500

The maximum volumes, calibration values and names for the liquid storage tanks can be setup here or the Tank Farm page.

Press the green button to enter the maximum volume of the Blended Product storage tank. It is recommended to enter a volume 5% less of the total volume to prevent the tank from over filling.

Press the red button to enter the calibration value for the storage tank. It is recommended to enter a value of 1 to start. When a known volume of liquid (IE: 1000 gallons) is in the storage tank, adjust the calibration value up or down to accurately reflect the actual volume.

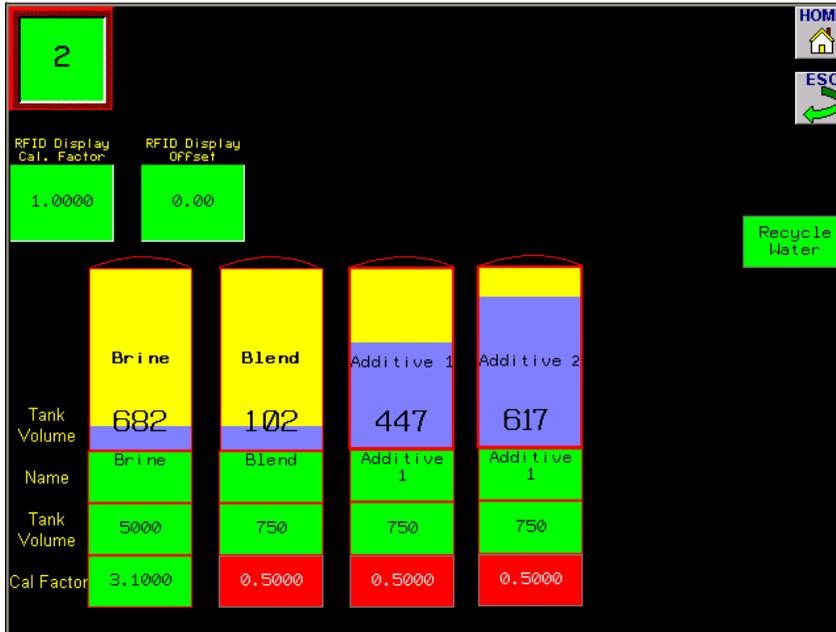
Continue this process for the Additive 1, and the Additive 2 storage tanks if applicable..

The storage tank setup can be done on the Tank Farm page as well. From the Main/Home page, select the Tank Farm button.

Tank Farm
-----------

## Set Up Page 3 Cont.

### Storage Tank Setup from Tank Farm



The Tank Farm page shows all the storage tanks applicable to the type of system selected. For example: A 2 Additive system without Recycled Water has been selected here.



Press this green button to enter the name of the storage tank if desired.

Press this green button to enter the tanks maximum volume. This value should be approximately 5 percent less than the tank capacity to prevent overfilling.

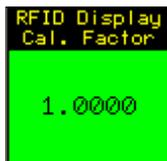
Press this green button to enter the calibration value. This value correlates the liquids pressure being read by the transducer to volume. This value can be moved up or down to reflect actual tank volume.

Enter the name, maximum tank volume, and calibration factor for each storage tank.

### RFID Digital Display Setup



Press the RFID Display Offset button if the display number is off from the actual volume delivered. For example: When filling a truck, the touch screen shows 250 gallons were delivered to the truck. The card reader display shows 245 gallons were delivered. Press the RFID Display Offset button and enter 5. This will correct the displayed value on the card reader to 250.



Press the RFID Display Cal. Factor button if the display number is off from the actual volume delivered. This cal factor multiplies the Offset factor by the value entered here. For example: Offset value 5 X Cal factor 1 = 5. (Note: This number will typically stay at 1)

## Set Up Page 3 Cont.

The Crossover is used for a 1 or 2 additive system to prevent small amounts of additives from being sent into the salt tank during the blended product process. After the additive is added to the blended product tank, the crossover keeps the three way tank valve open to the blended product tank for (in this case, 6 seconds) until brine flushes the valves and plumbing.



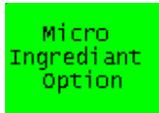
Press the crossover button to activate this feature. Press the button to the right of the crossover to enter a value in seconds. (5 or 6 seconds is recommended)



OR



Press the Recirculation or Tank Agitation button to access the setup page. (See pages 39 - 40)



Press the Micro Ingredient button to access the setup page.

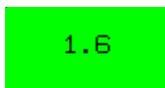
## Micro Ingredients

Micro Ingredient Option: The Micro Ingredient Option injects trace amounts of micro ingredients into the finished product. These could include anti-foaming agents, dyes etc. Press the Micro Ingredient Option button to go to set up page.



Select which product to add the Micro Ingredient to. Select the Reset button to turn off the addition of the Micro Ingredients to the products.

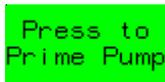
Select which product/s to add Micro Ingredients into while filling trucks. Select the Reset button to turn off the addition of the Micro Ingredients while filling trucks.



Press this button to enter the pump flow in units per minute. This example is set at 1.6 gpm. Use key pad and press enter when completed. Note: Pump flow may be found on pump label.



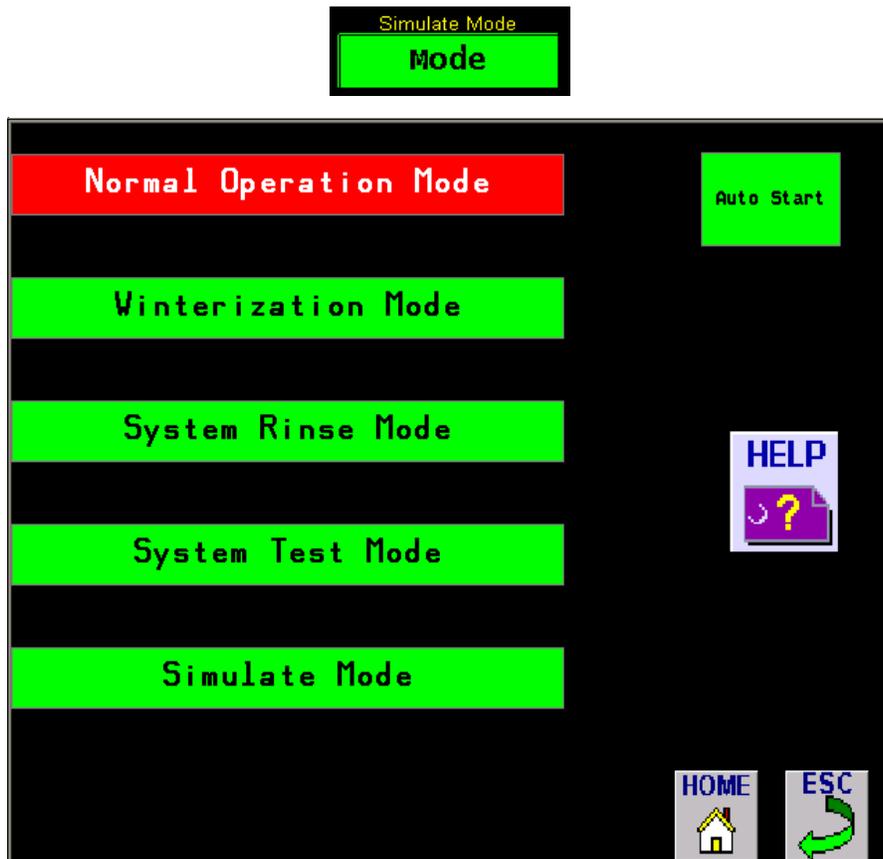
Press this button to enter the desired ratio of Micro Ingredient per units of product. Note: You must use like units. For this example, 1.6 gallon of additive per 5,000 gallons of product. (Refer to manufacturers label for correct ratios)



Press button to manually prime pump. Depending on length of supply tubing, this may take several minutes to prime.

## Operating Modes

To access Mode page, Enter password of 4096, Go to the HOME page and press the Mode button.



**Normal Operation Mode:** Machine is able to make brine, and do other production and delivery functions with options equipped on machine.

**Winterization Mode:** Machine starts timers that are setup for recirculating the salt tank, storage tanks and inline heater. When Brine and Blend products need to be produced, or when the Remote Truck Fill is started, the Winterize Mode will be paused. Winterize Mode will resume when the batch is complete or truck fill is shut off.

**System Rinse Mode:** Machine flushes out the main control panel and pump with fresh water. **Caution:** Close suction/brine out valve on salt tank and remove hose to brine storage tank to prevent fresh water from entering storage tank before activating mode. Lines will be filled with fresh water. Take appropriate actions to prevent freezing of lines. *Select System Rinse Mode button and press Auto Start.*

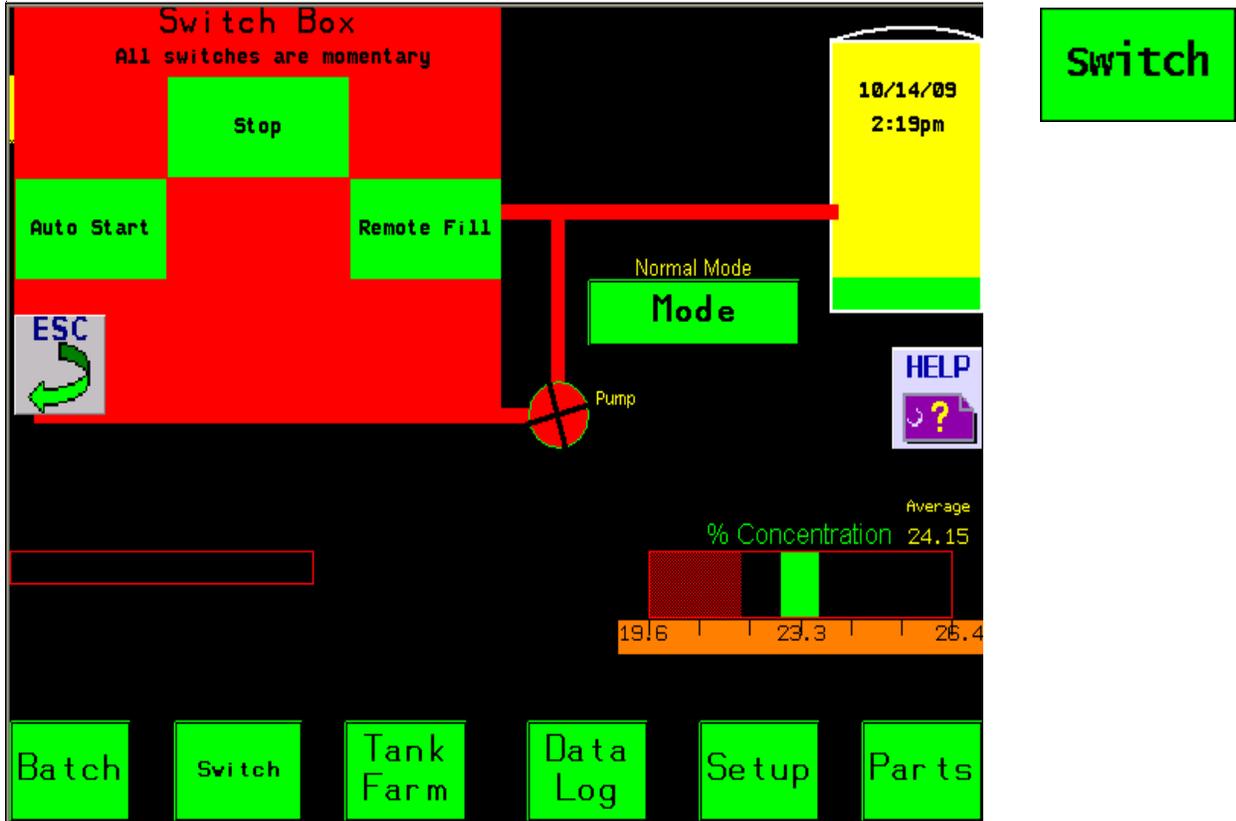
**System Test Mode:** Machine cycles actuated valves and pump on the Main Control panel and checks operation. If a valve fails, the machine will fault. *Select System Test Mode button and press Auto Start.*

**Simulate Mode:** Machine simulates brine production. Brine concentration, and the liquid level in salt tank are simulated. **Caution:** Valves will open and close and pump will operate. To run the simulate mode without the pump running, turn off pump circuit breaker. Close all valves at storage tanks to prevent liquid from back flowing into system. Close fresh water supply valve to prevent fresh water from being added to salt tank. This is a good feature for training operators with out actually making product.

## HMI Switch Box

The HMI Remote Switch Box feature allows operation of the Auto Start, Remote Truck Fill and Stop switches from the HMI or Webgate from a remote location if a physical switch is damaged.

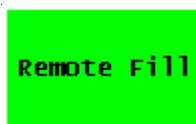
To access the switch box, enter Password 4096, go to the Home page, and press the Switch button.



**Stop Button:** Stops the current batch production. This is a momentary button.

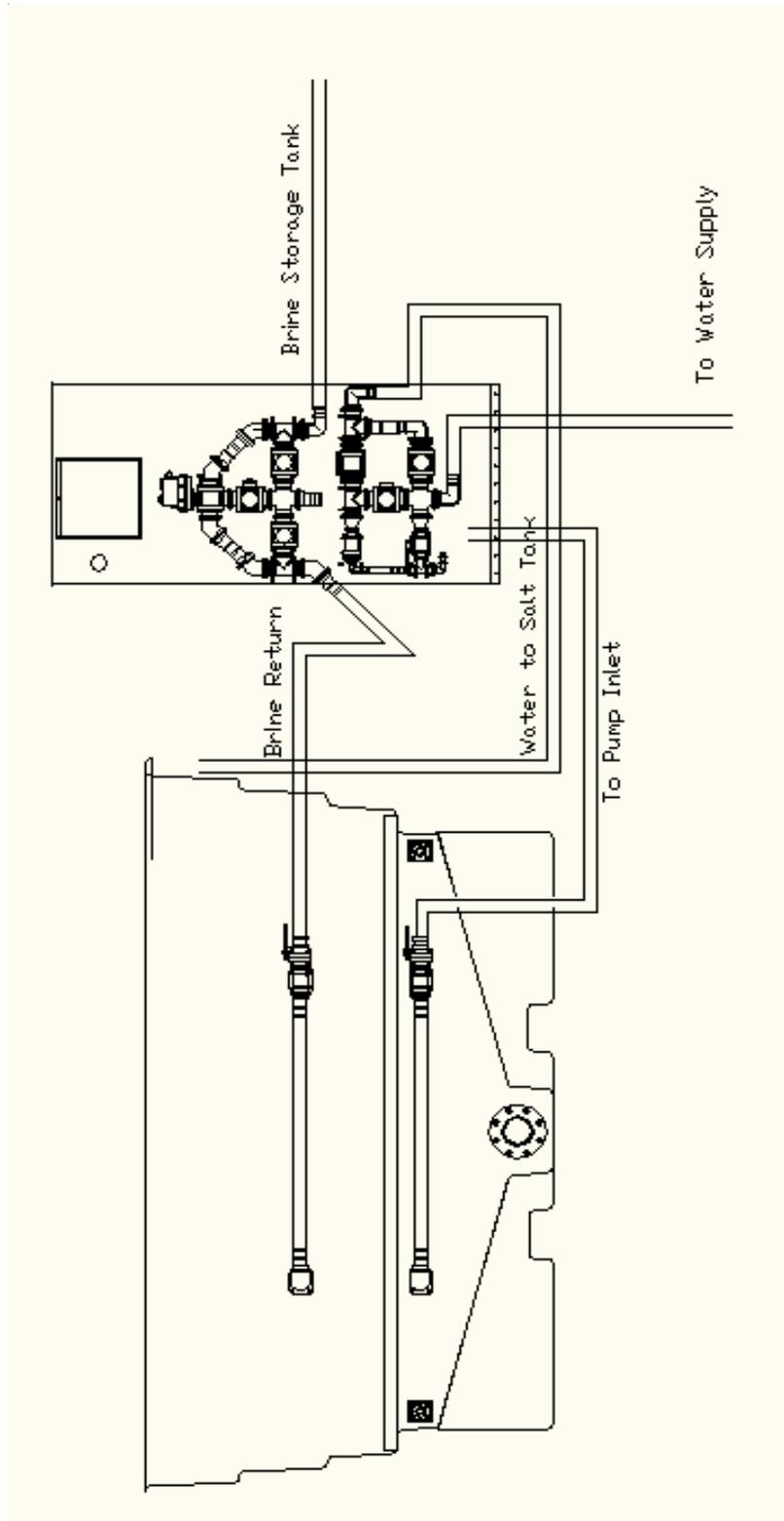


**Start Button:** Starts the current batch production. This is a momentary button.

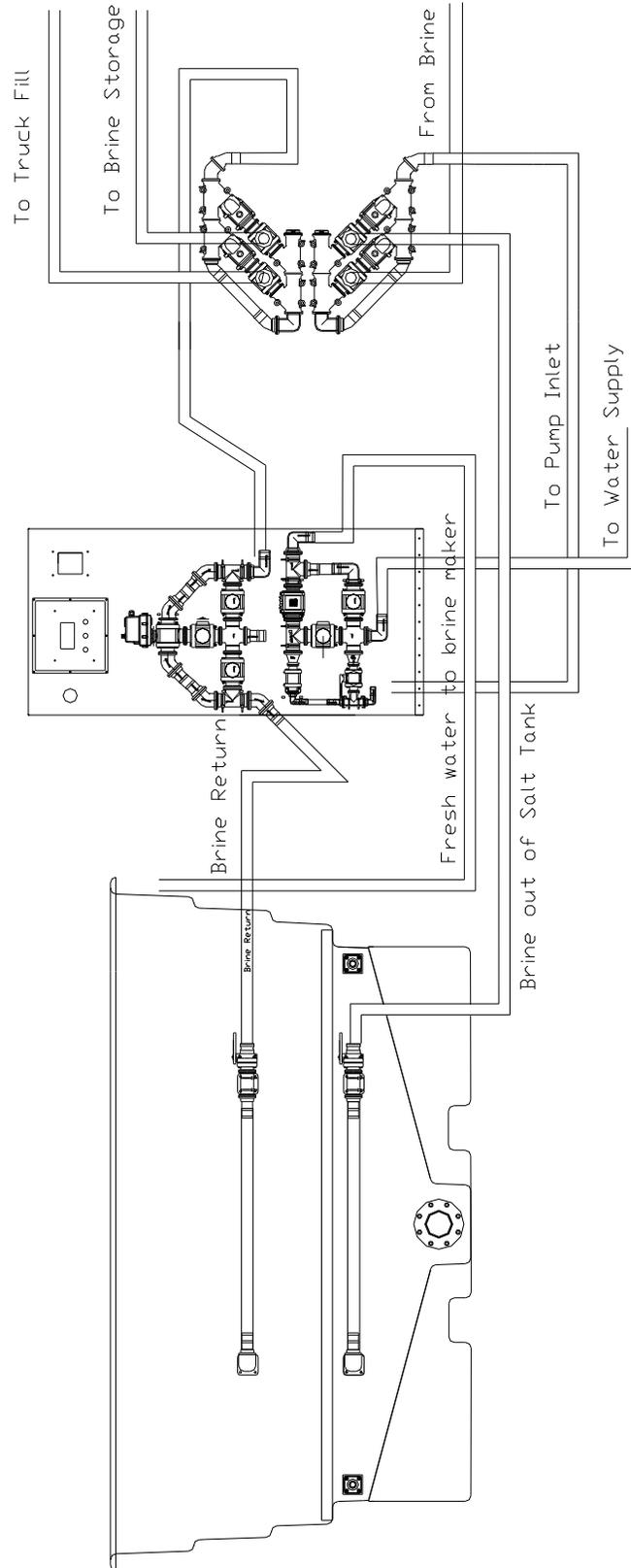


**Remote Fill Button:** Has the same functionality as the physical Remote Truck fill button at fill point. Use if remote switch becomes inoperative.

Plumbing Configuration Drawings  
Accubrine Model: AB - Brine Production

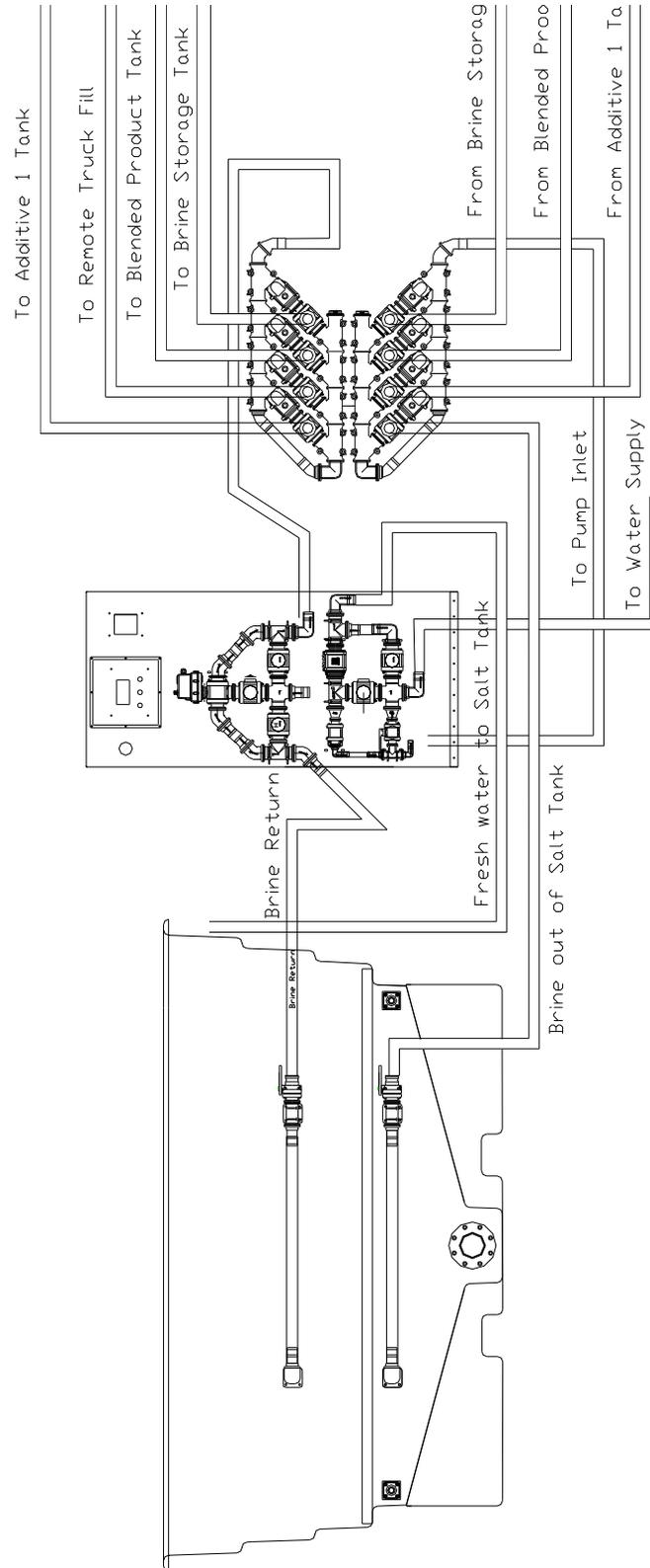


Plumbing Configuration Drawings Cont.  
Accubrine Model: RTF - Brine Production and Remote Truck Fill



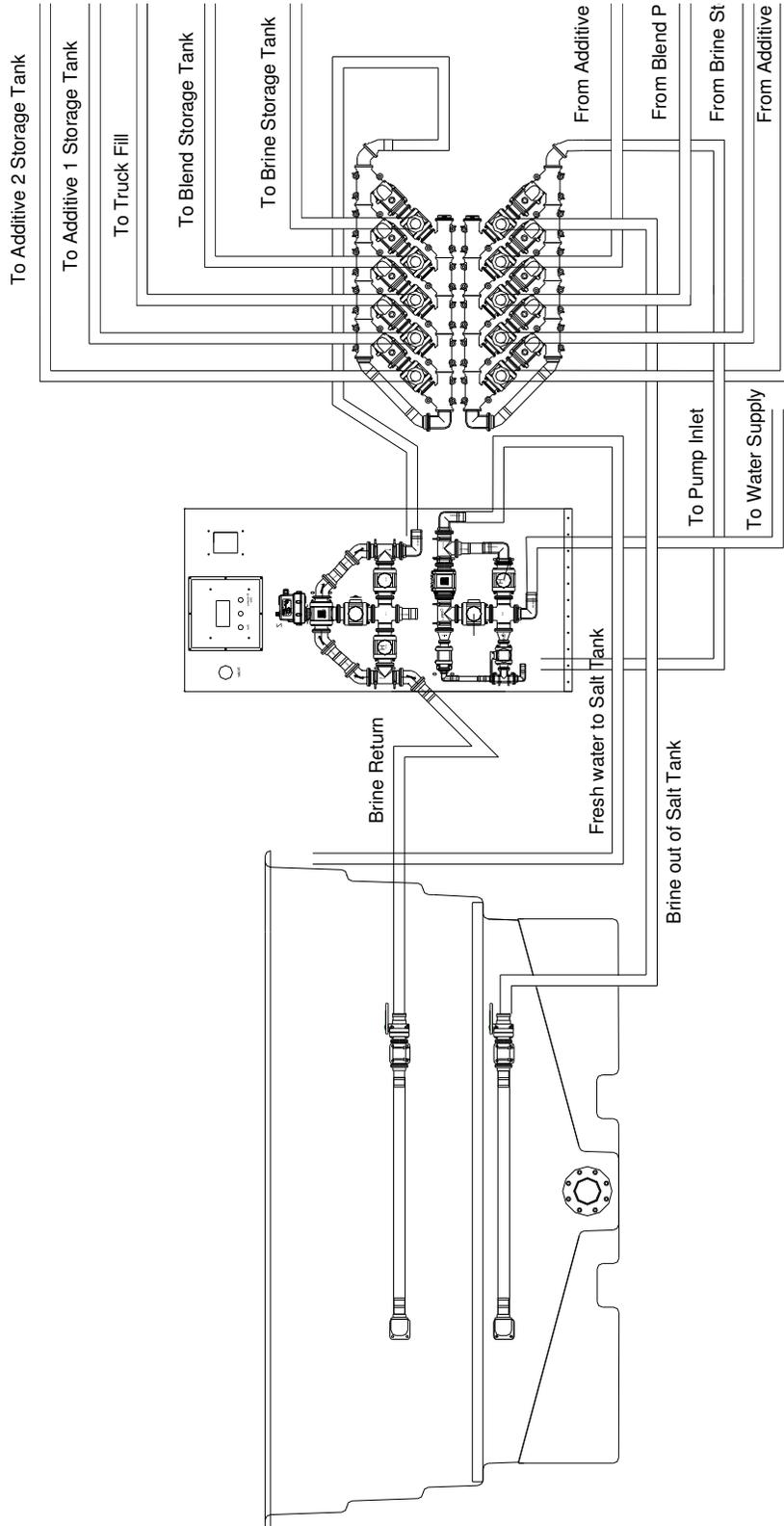
Plumbing Configuration Drawings Cont.

Accubrine Model: ABS - Brine Production, 1 Additive and Remote Truck Fill



# Plumbing Configuration Drawings Cont.

Accubrine Model: ABS2 - Brine Production, 2 Additive and Remote Truck Fill



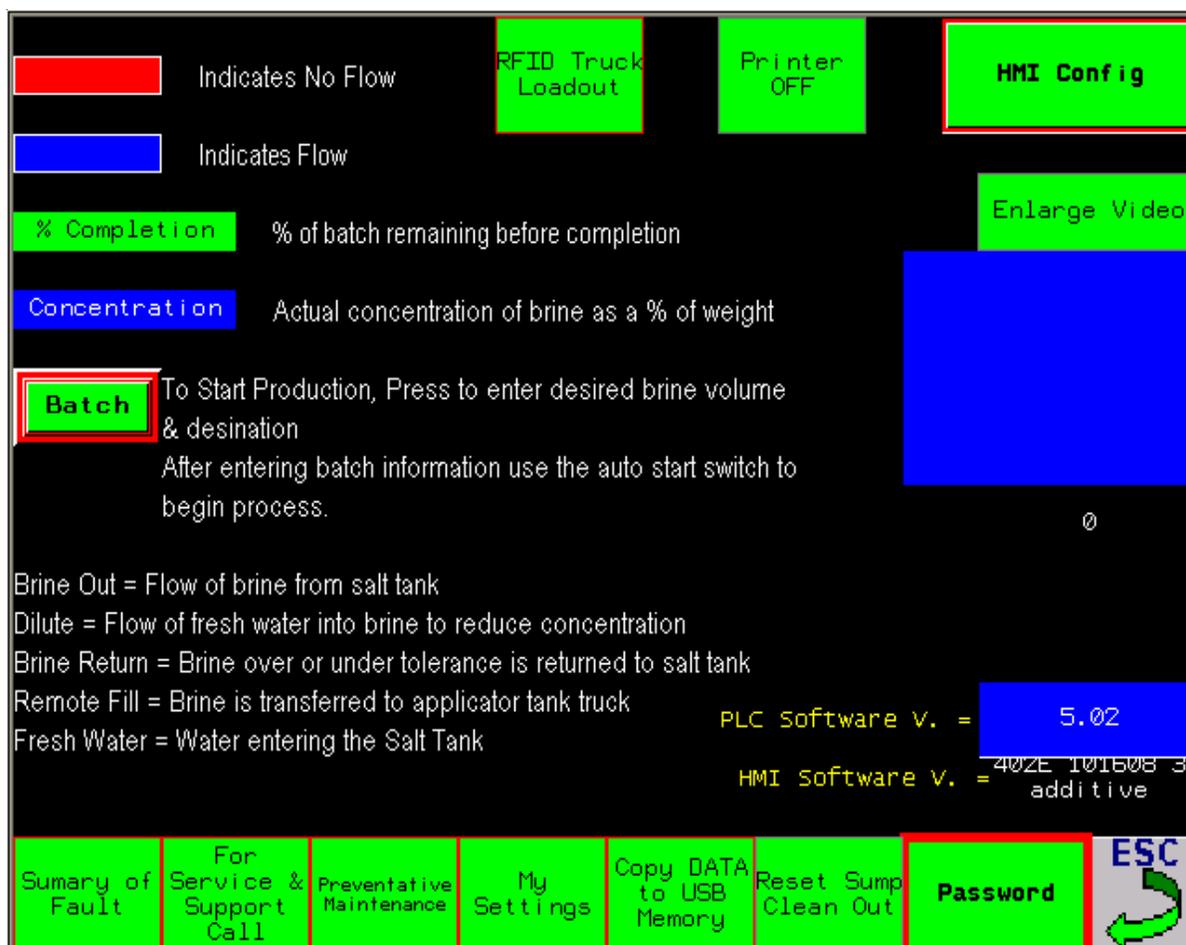
## Help Screen, HMI Configuration, My Settings, and Copy Data to USB Features

When password 2048 is activated, the HMI configuration, My Settings and, Copy Data to USB features become available.

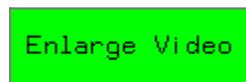
From the HOME screen, press the button.



Change password to 2048, then press enter.



Press button to activate “Print” button on all screens. Press green “Print” button to print current screen if printer is connected. Note: Installed printer must be compatible with Hewlett Packard PCL 6 driver.



Press button to enlarge video screen if video camera is installed.

## Saving and Reloading Machine Configuration - My Settings



Press the My Settings button to access Recipe screen to save and reload current Operational machine settings.

Recipe Group: Operational Set Up ▼ Use Down Arrow Button to Select "My set up Configuration"

Recipe: Operational Setup ▼ Use Down Arrow Button to Select "Operational Setup"

**Snapshot** Press the Snapshot Button to Load Curent Machine settings

**Save** Press the Save Button to save the curent snapsot machine settings

**Send** Press the Send Button to load previously saved settings onto the machine

		Variable	Value	
Idle	No Error	Target_concentration	23300	▲          ▼
		concentration_deviation_2	250	
	dilute_on	100		
	dilute_off	5		
	accel_percent	883		
	accel_mult	1		
	low_salt	30		
	flow_resolution_2	12		
	flow_GPML2	107		

**ESC**

This screen will allow you to take a snapshot of the current machines Operational settings, Data Log Settings, and Preventative Maintenance settings to reload if settings were changed by mistake.

Recipe Group: Operational Set Up ▼

Recipe: Operational Setup ▼

Press first down arrow and select Operational Setup, Data Log, or PM Log.

Press first down arrow and select Operational Setup, Data Log, or PM Log.



Press the Snapshot Button to capture the machines current configuration settings. The values for each item above will populate with the current setting.



Press the Save Button to save the machines current configuration settings.

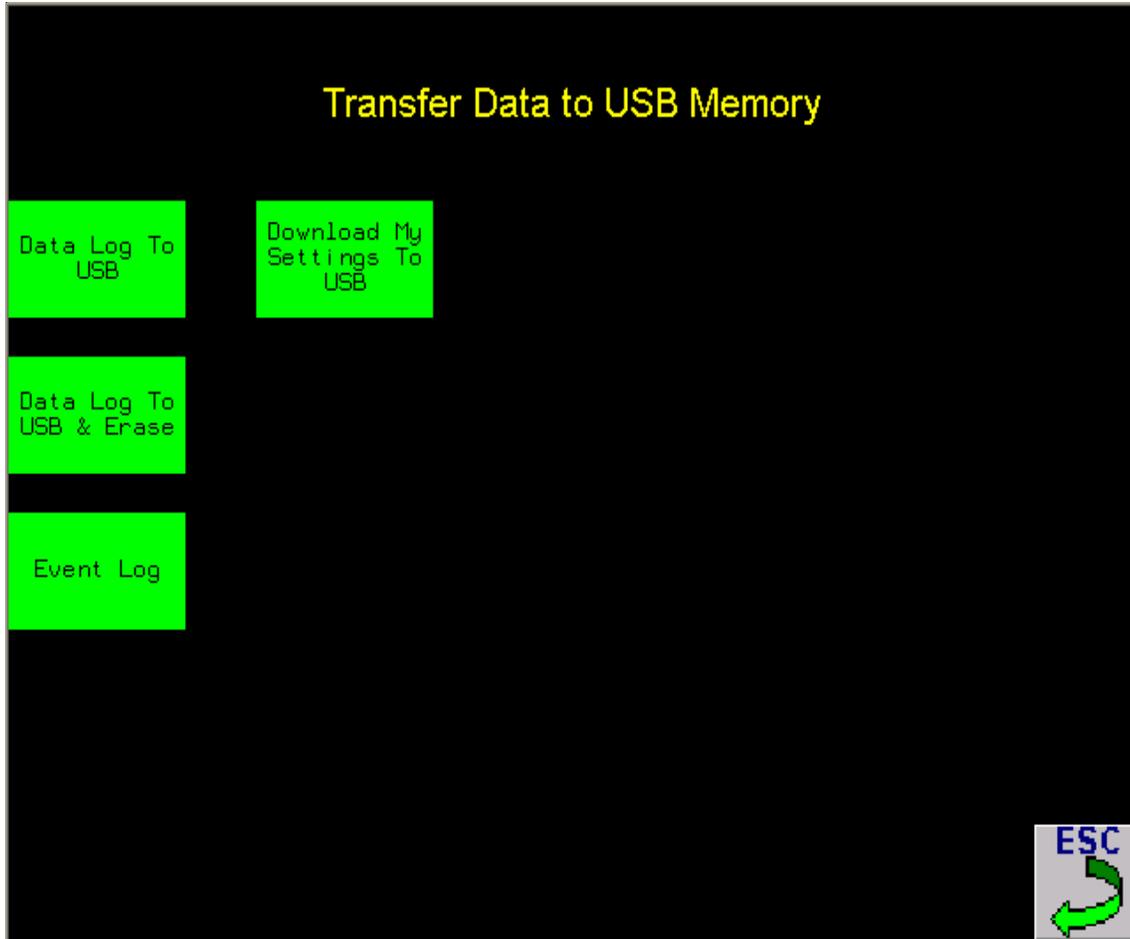


Press the Send Button to reload the previously saved machine settings into the setup pages.

## Copy Data to USB Flash Drive Memory

Copy DATA  
to USB  
Memory

Install a portable flash drive into the supplied USB connector on side of control panel enclosure. Press button to access the Transfer Data to USB selection page.



Data Log To  
USB

Select this button to download the data collected from production and truck loading to a portable USB memory stick. Insert a formatted (Fat32) USB memory stick into the USB port on the side of the HMI enclosure. The message: USB device is plugged in. Press the “Data Log to USB” button.

Data Log To  
USB & Erase

Select this button to download the data collected from production and truck loading to a portable USB memory stick and erase all data stored in internal memory.

Event Log

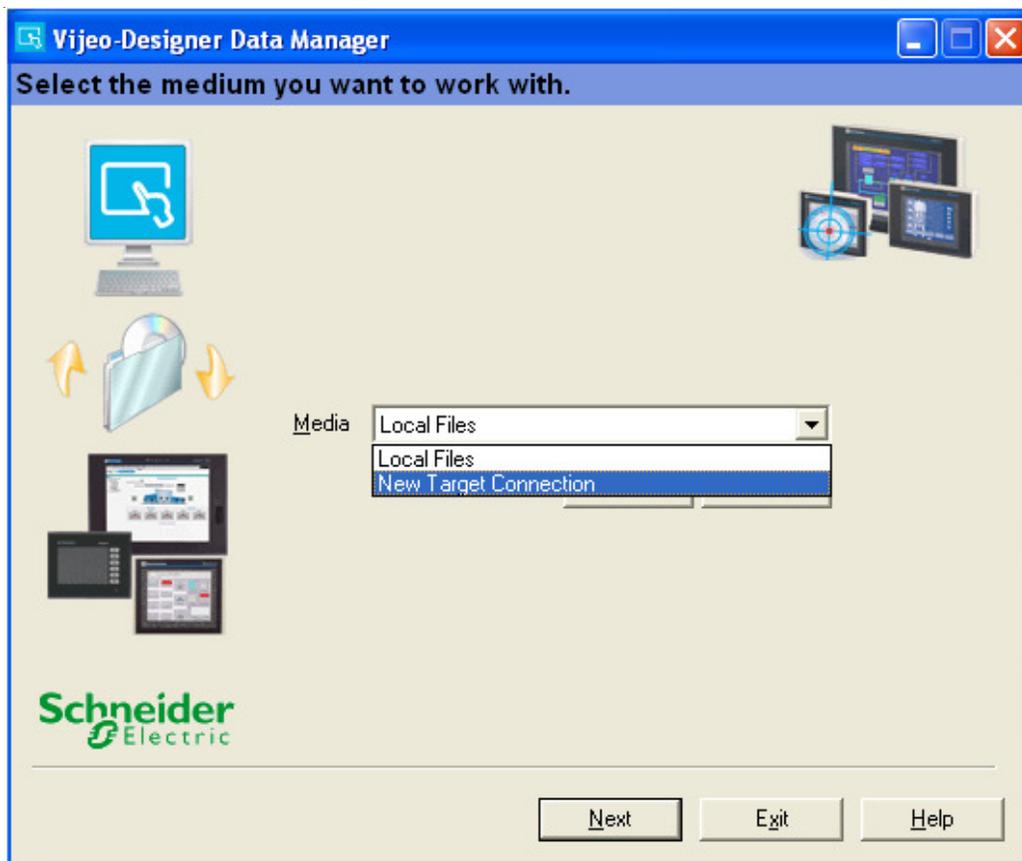
Select this button to download the fault data that has occurred, to a portable USB memory stick.

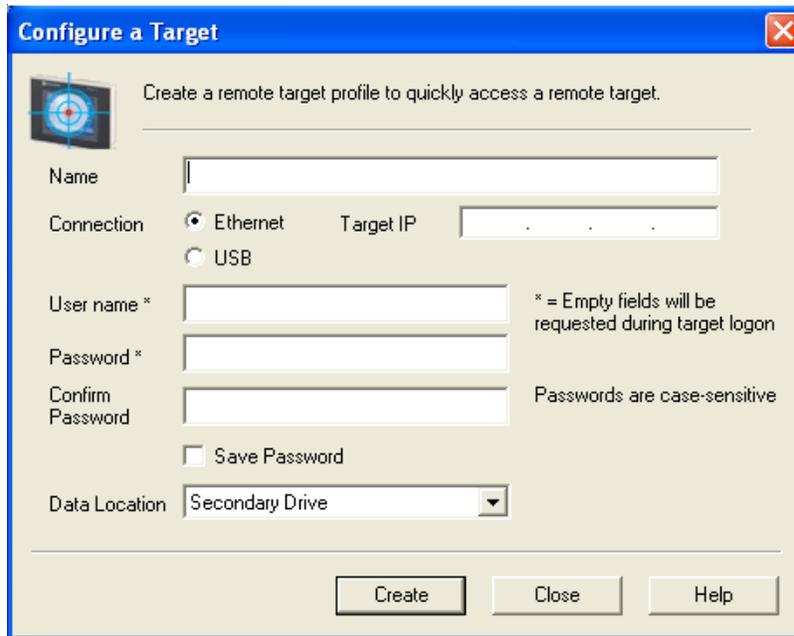
Download My  
Settings To  
USB

Select this button to download “My Settings” (the brinemakers setup variables) to a portable USB memory stick.

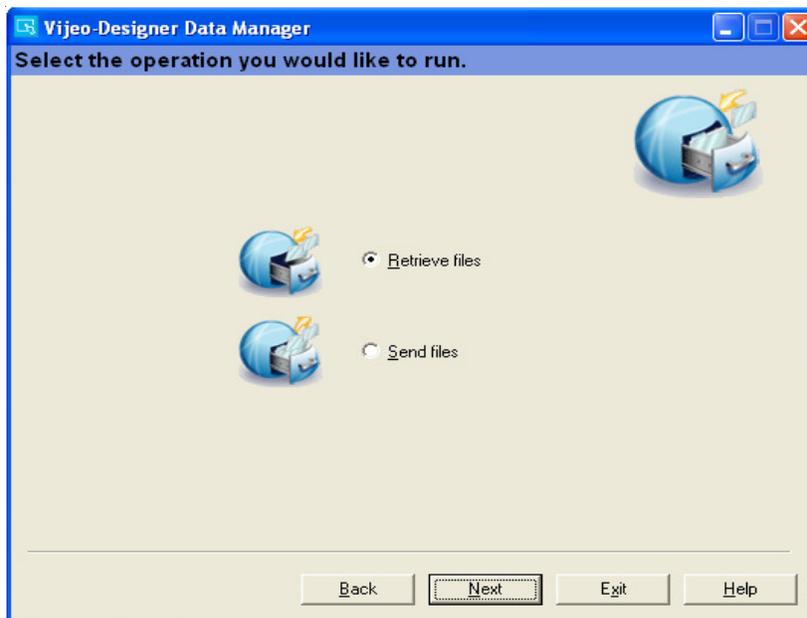
## HMI Data Download with LAN or USB Memory Stick

1. Data may be extracted with 2 methods:
  - a. By direct communication between the Accubrine HMI and a computer with a network connection (LAN). To download data via LAN connection, Vijeo Designer Data Manager Software must be loaded onto the target/owners computer.
  - b. By plugging in a USB flash drive directly into the HMI. (USB port located on the side of the HMI - see page 64)
2. HMI Data logs are available on a daily basis after midnight. Note that data logs created prior to midnight will not be available for download until after that time.
3. To download via LAN network the HMI must have the LAN option enabled and you must connect your PC to the HMI via ethernet cable.
  - a. Start **Vijeo Designer Data Manager**.
  - b. Under media, select: ***New Target Connection***
  - c. Then select ***Create***

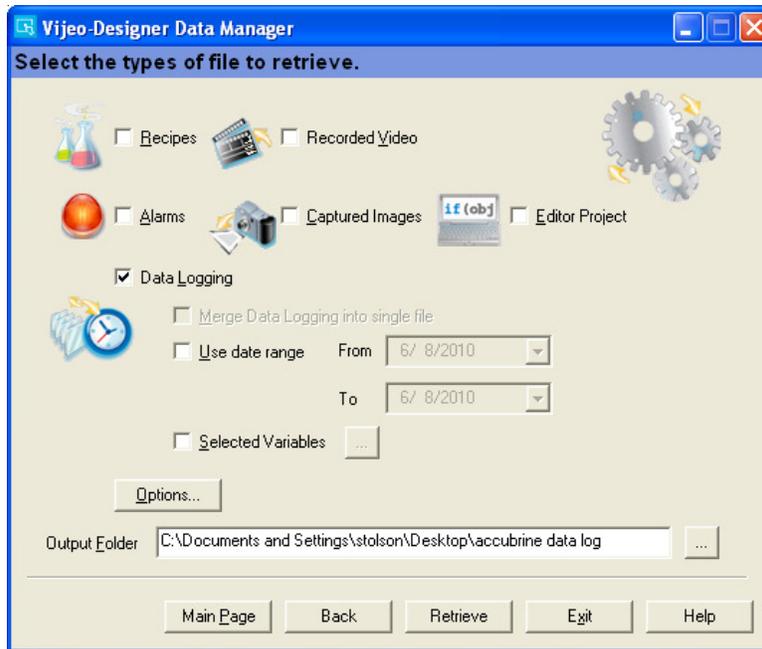




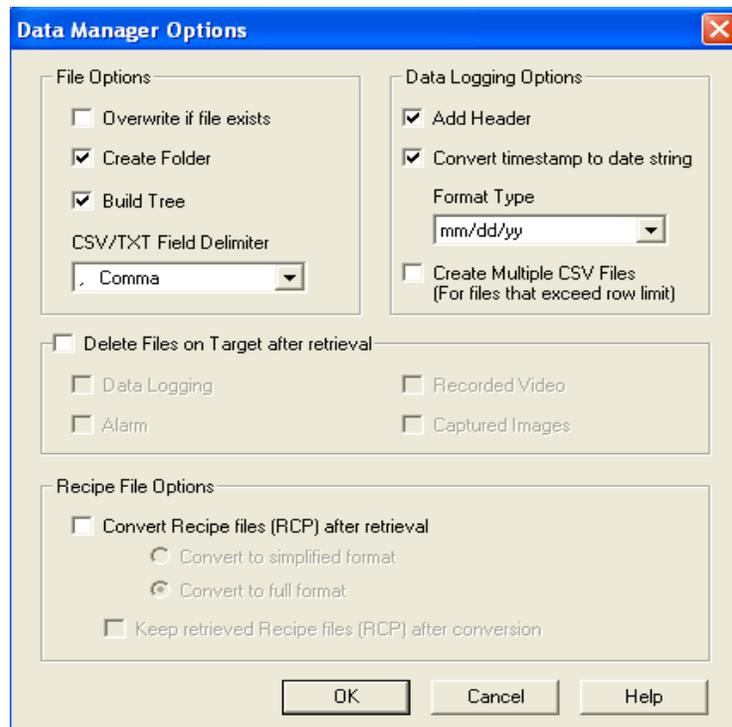
- d. On the **Configure Target** screen: Name: create a name such as Accubrine data download (or select a connection previously created).
- e. Select: **Ethernet**
- f. Enter the Touch screen/HMI IP address: **196.170.86.54**
- g. User name: enter **accubrine**
- h. Password: enter **4096**
- i. Data Location: select **Secondary Drive**
- j. Select: **Create**
- k. You will be taken back to the previous page



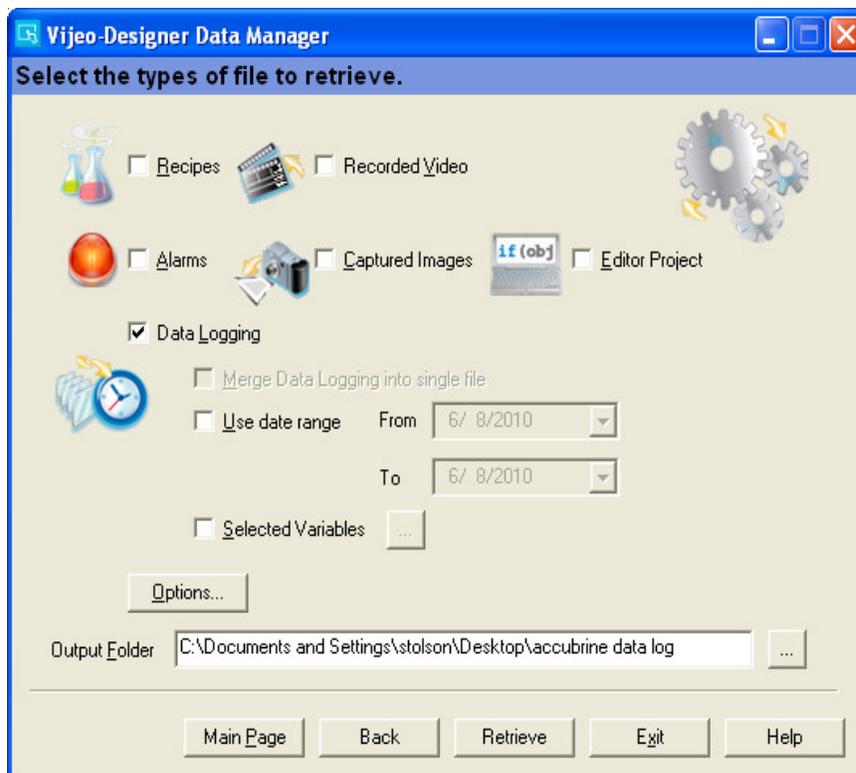
- l. Make sure **Retrieve Files** is selected and press **Next**.



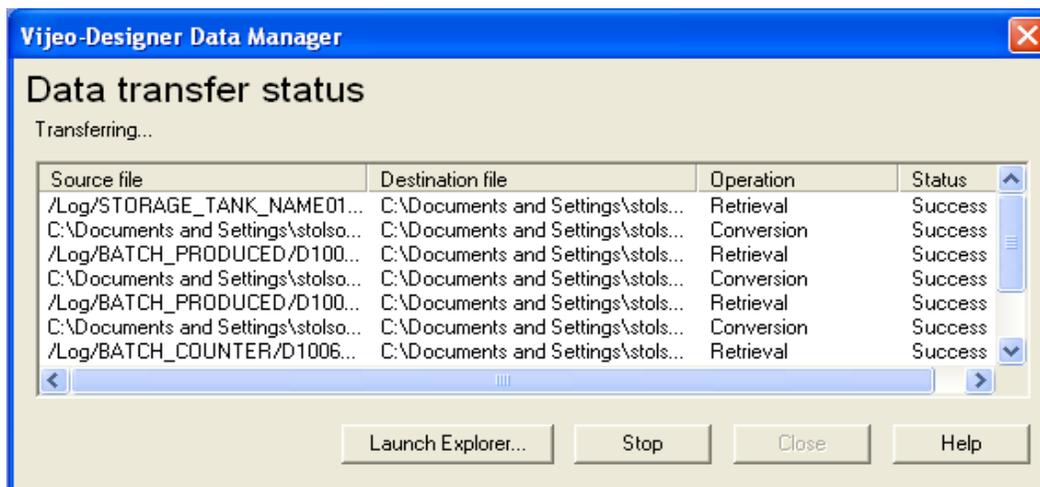
- m. Select: **data logging**
- n. Press the **options button**



- o. Select: **Overwrite if file exists**. Caution this will override previous downloaded data. If previous data is to be stored, save new data in new folder and location.
- s. Select: **Create a folder**
- t. CSV/TXT Delimiter, select **comma**
- u. Select: **Header**
- v. Select: **Convert time stamp to date string**
- w. Format type, select: **mm/dd/yy**
- x. Select: Delete files on target (HMI) after retrieval, if desired and **press OK**.



- y. **Output Folder:** Use the preselected desktop location for the output folder or use the drop down button to select another location on your PC.
- z. Press **Retrieve**



- aa. A progress/status page will pop up showing the retrieval process.
- bb. When complete, press **Close**.
- cc. Retrieval process is complete and you may press **Exit** to close the **Vijeo Designer Data Manager** program.

## Accubrine Data Manager - RFID and Truckfill Data Extraction Tool

This data extraction tool is used to extract, convert, and report RFID and Truckfill data generated by the Accubrine system and downloaded to a USB memory stick or PC via LAN access. (See pages 64-68) The data manager is located on a CD that is supplied with the brinemaker. Follow the installation and operational instructions on the following pages.

## Installing AccuBrine® Data Manager

You should be a Windows user and have some experience installing software on Windows computers.

1. Check your system requirements.
2. Prepare for the installation.
3. Complete the installation.

### Check Your System Requirements

The following sections list the minimum hardware and software requirements for running AccuBrine® Data Manager.

#### Hardware

- Computer 32-Bit Processor minimum 400 megahertz (MHz)
- Recommended 1 gigahertz (GHz) RAM; Minimum 96 megabytes (MB)
- Recommended 335 megabytes (MB) available hard disk space for AccuBrine® Data Manager and its software prerequisites.
- VGA or higher resolution monitor with minimum 800x600 pixel resolution./li>

#### Software

AccuBrine® Data Manager Setup does not install the following required software components.

#### Supported Operating Systems

Windows XP with SP2, Windows Vista, and Windows 7

#### Microsoft Windows .NET Framework 3.5

AccuBrine® Data Manager does not install .NET Framework 3.5. Before installing AccuBrine Data Manager, you must download and install the .NET Framework 3.5 from this [Microsoft Web site](#).

## Accubrine Data Manager - Installation cont.

### Vijeo-Designer Data Manager 5.0

Installation is required by AccuBrine® Data Manager and its installation files are included. For further information on the Vijeo-Designer Data Manager please refer to the AccuBrine® brinemaker operator's manual.

Each of these components is installed separately; only the AccuBrine® Data Manager setup support files are automatically removed when you uninstall AccuBrine® Data Manager. After installing required components, AccuBrine® Data Manager Setup will verify that the computer where AccuBrine® Data Manager will be installed also meets all of the other requirements for a successful installation.

### Preparing for the Installation

Before you install, you must check that you have administrator privileges for the Windows computer you are installing on. If you do not have administrator privileges, ask your system administrator to add you to the Administrator group on your computer or ask the system administrator to perform the installation on your behalf. /p>

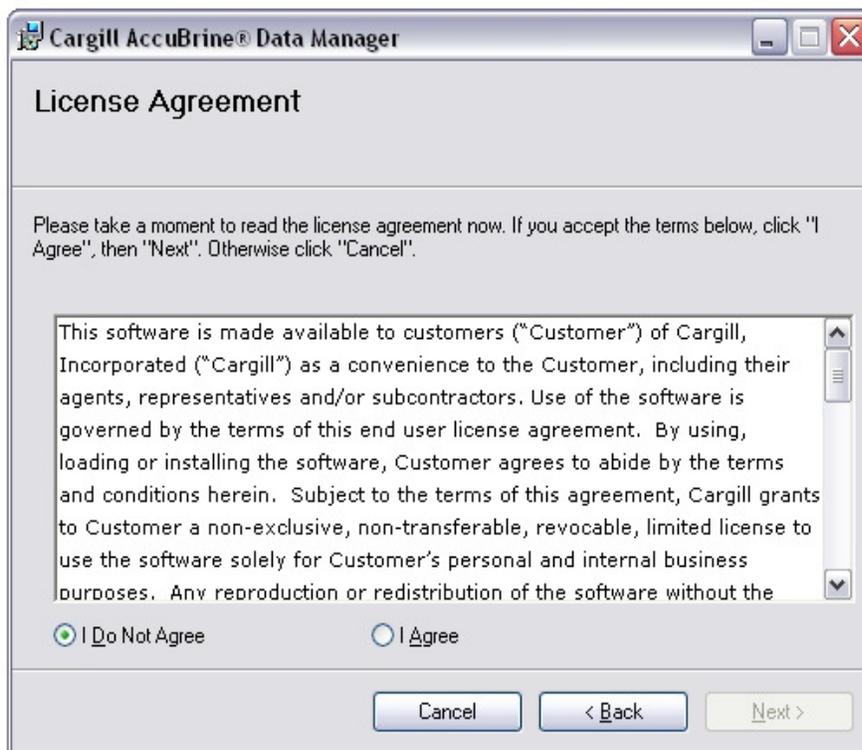
Before starting any installation, we recommend that you close all programs that are currently running. This will help to ensure that the installation program can copy all the required files to your computer.

### Installing AccuBrine® Data Manager

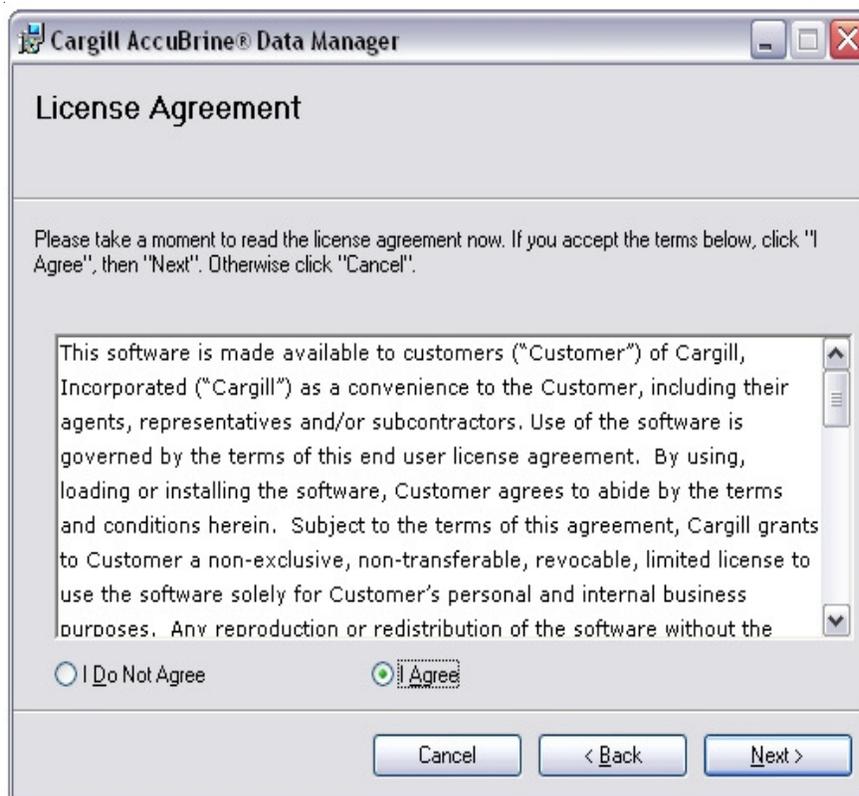
1. Copy AccuBrine® Data Manager install files from your installation media (flash drive, CD, etc.) and paste them onto your computer.
2. Run setup.exe (from the location where you saved the install files on your machine) and follow the installation wizard's on-screen instructions to install AccuBrine Data Manager. By default, Data Manager installs to: C:\Program Files\Cargill, Incorporated\Cargill AccuBrine® Data Manager\



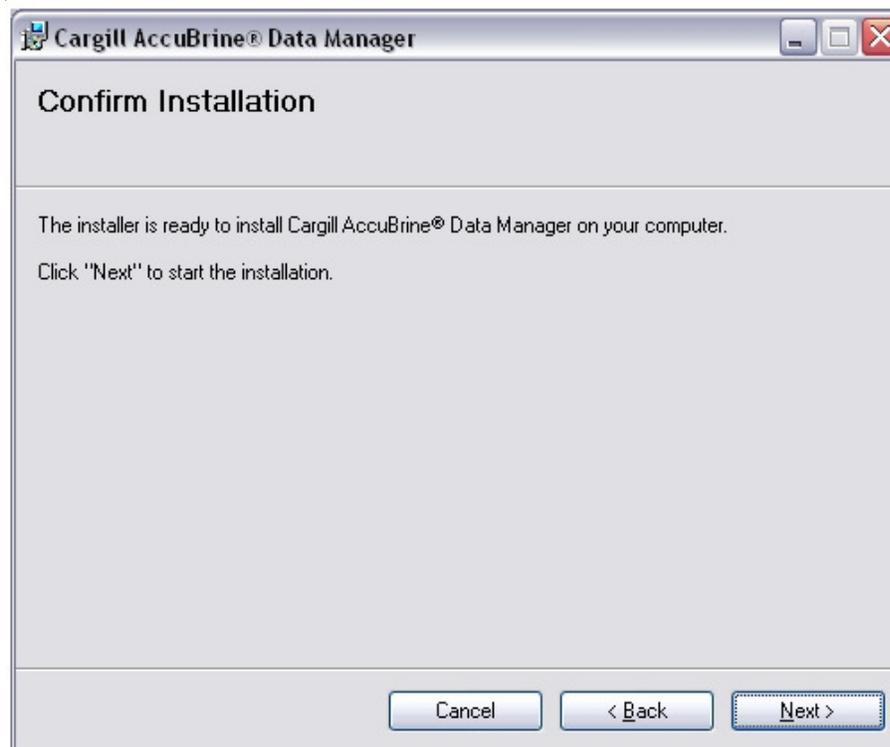
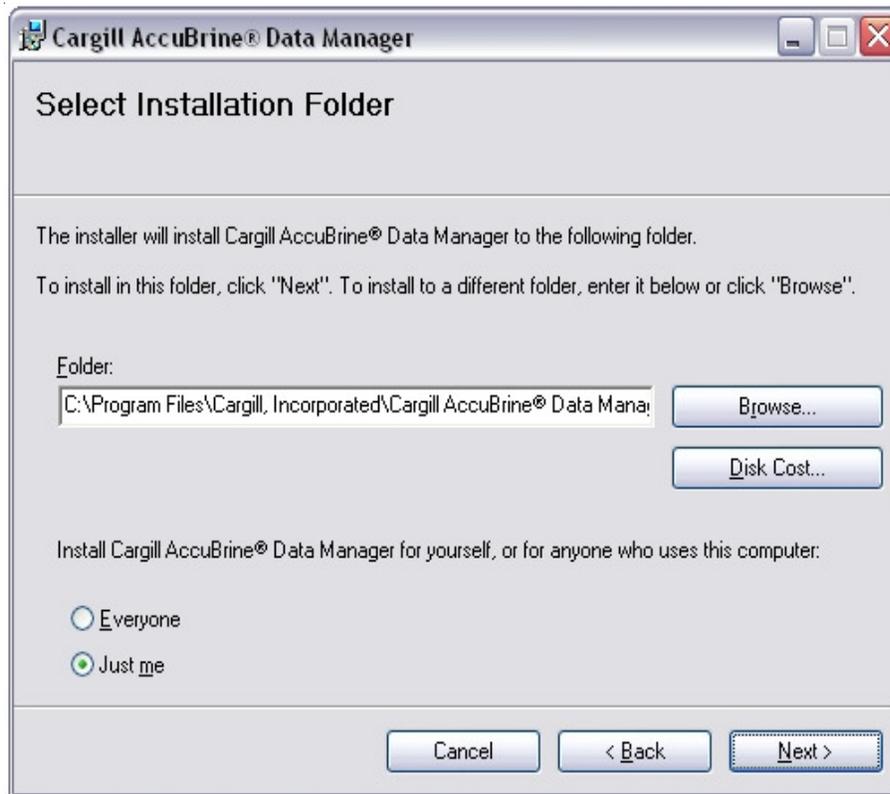
## Accubrine Data Manager - Installation cont.



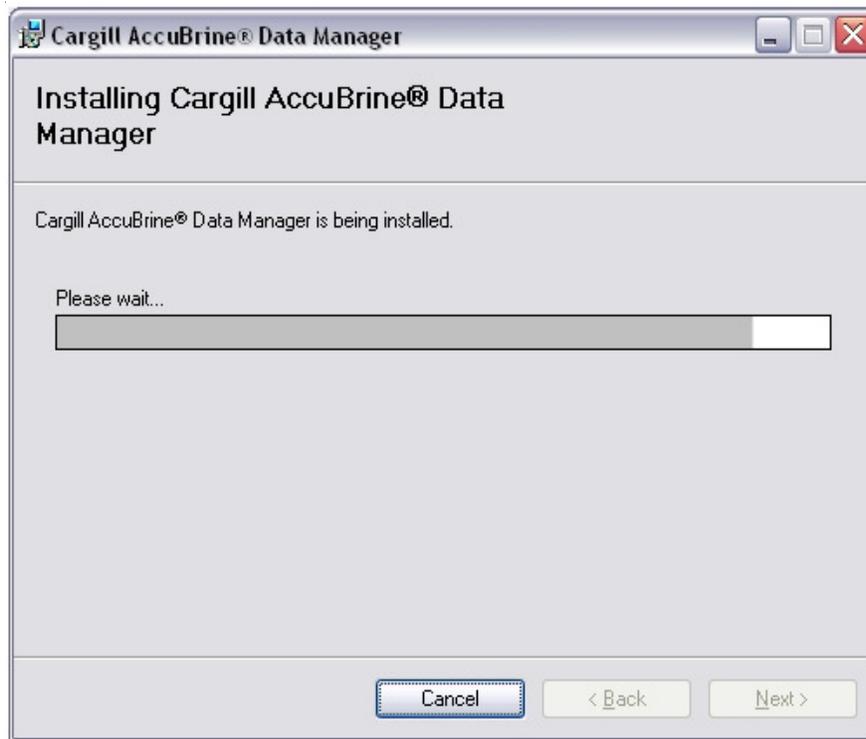
Please read the license agreement and select "I Agree" to continue the install process.



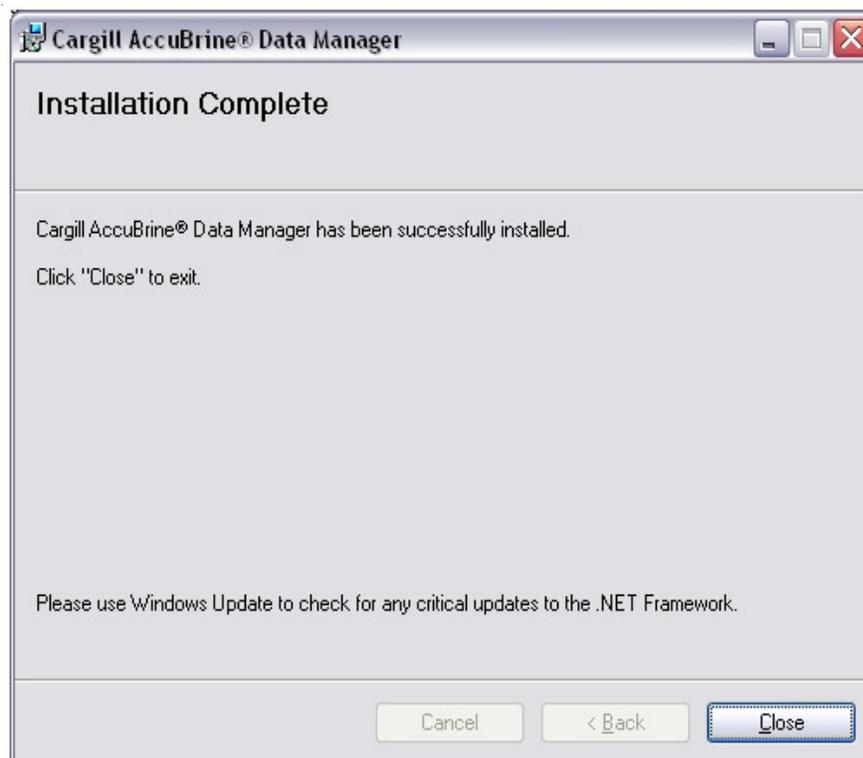
## Accubrine Data Manager - Installation cont.



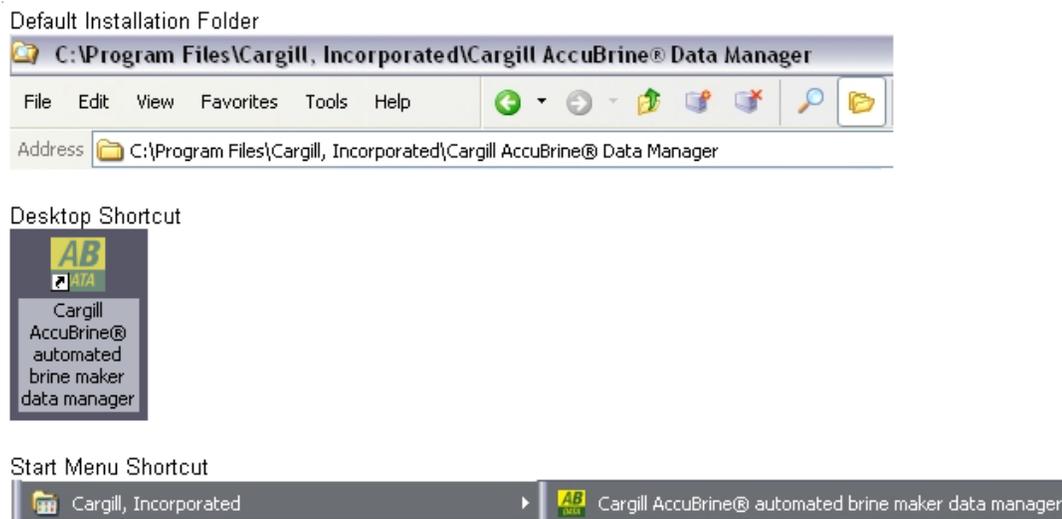
## Accubrine Data Manager - Installation cont.



If the installation detects that Vijeo-Designer Data Manager 5.0 is not installed, it will run the Vijeo-Designer Data Manager install wizard. Install Vijeo-Designer Data Manager on the same drive as AccuBrine® Data Manager. If you end the Vijeo-Designer Data Manager installation before it successfully completes, the AccuBrine® Data Manager installation will terminate without installing successfully.



## Accubrine Data Manager - Installation cont.



To start the Accubrine data Manager, double click on the desktop icon or access through the start menu.

If you desire to remove the Data Manager tool, follow the instructions below.

## Removing AccuBrine® Data Manager

Remove the Data Manager from your computer by using the Add/Remove Programs in the Windows Control Panel.

1. Select the Windows' Start button.
2. Select Settings and then select Control Panel.
3. Open the Add/Remove Programs application.
4. Select AccuBrine® Data Manager in the programs list.
5. Select Remove.
6. Follow the on-screen instructions to remove Data Manager and Command Line from your computer.

## AccuBrine® Data Manager Overview

AccuBrine® Data Manager is a graphical user interface program that can convert AccuBrine® automated brine maker data log files (.dat) into Microsoft Excel files (.xls).

## Using AccuBrine® Data Manager

Data Logging files (.dat) are records of RFID - Truck Fill events captured during the operation of the AccuBrine® automated brine maker.

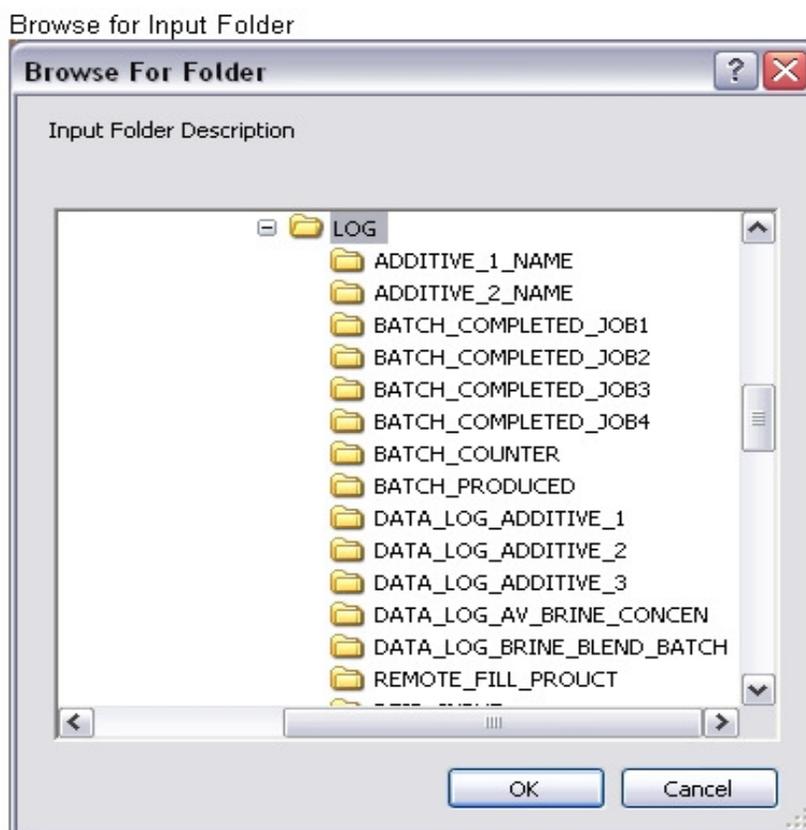
For Instructions to retrieve files from AccuBrine® automated brine maker refer to the AccuBrine Operators Manual to copy data to a USB Flash memory drive.

## Converting Data Logging Files into Microsoft Excel report

1. Start AccuBrine® Data Manager. In the Windows Start menu, point to Programs, Cargill, Inc. and click Cargill AccuBrine® Data Manager.
2. **Input Folder:** Specify the folder that contains the files to convert. Click the Input folder ellipsis button and use Windows Explorer to specify the Input folder. Alternatively, you can type the file path directly into the Input folder field.
3. **Use Date Range:** When selected, AccuBrine® Data Manager converts only the Data Logging files that were created within the specified date range. Specify the date range using the From and To fields.
4. Click **Convert** to convert the files and preview the report.
5. To Save the report to a Microsoft Excel file, select the [Save] toolbar button and specify the location where to save the file.
6. To create another report, close the report preview window.

\*AccuBrine® Data Manager converts the dates in data logging files to the Time Zone and Daylight Saving Time settings of the computer where the AccuBrine® Data Manager is installed.



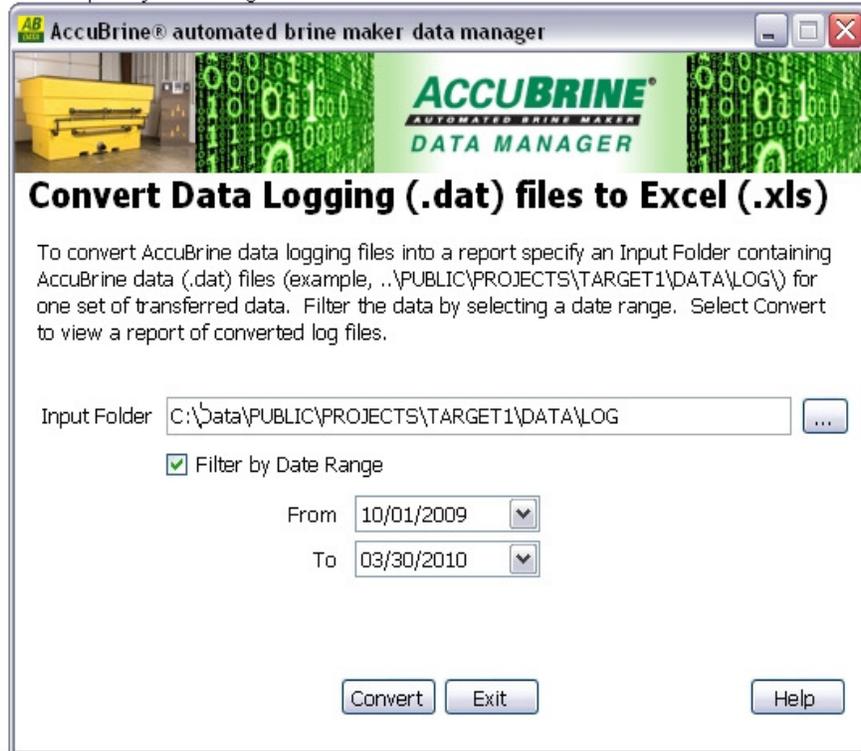


The input folder must be the LOG folder where all the data log files are stored (USB memory stick or location where data was stored from LAN access download). Do NOT select an individual folder within the LOG folder.



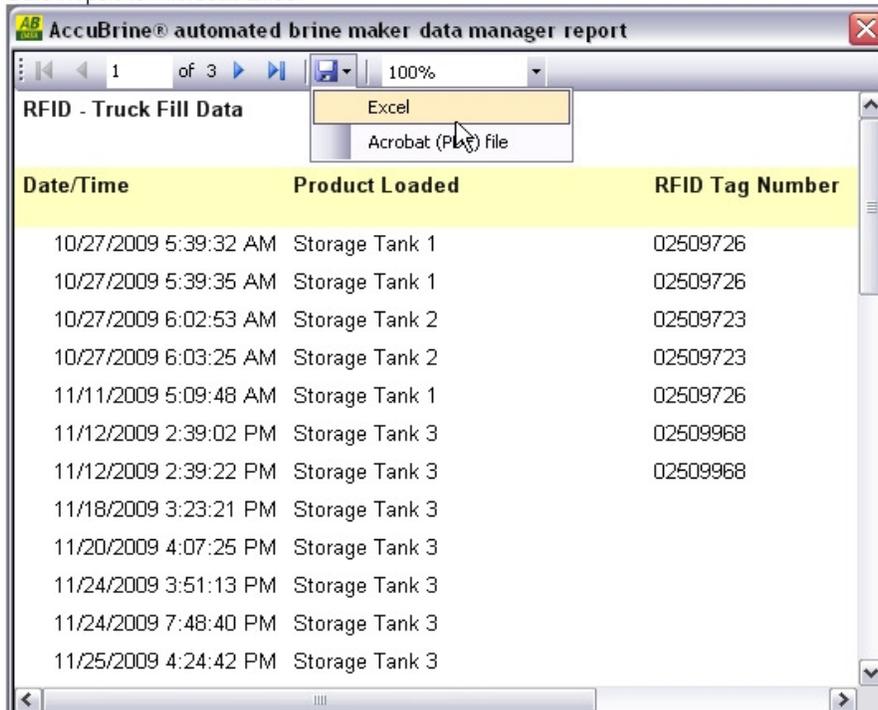
If the data to be extracted falls within a particular date range, select the filter by date range box, and enter the date ranges in the boxes below.

Filter Report by Date Range

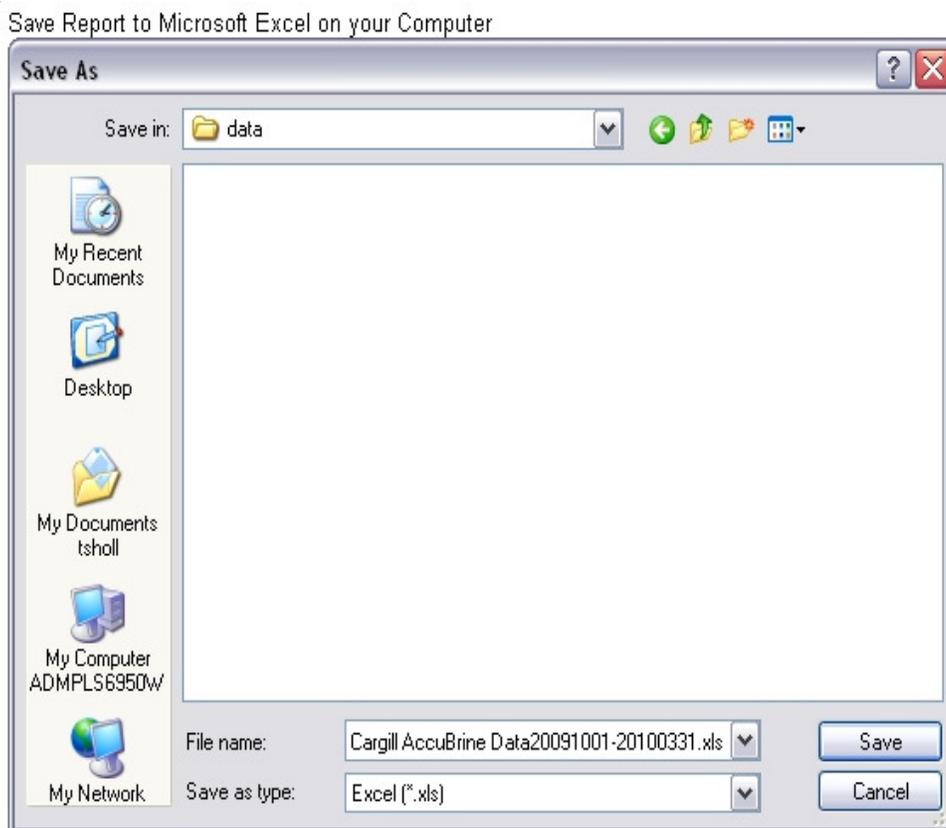


Press the convert button and a preview of the data report will be generated. If you choose not to save the report, select new dates or press the Exit button to end the Data Manager session.

Save Report to Microsoft Excel



To save a copy of the data report, select File, then Save As and select where you want to save the file. You can then name the file as in the example below. Press the Save button.



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## AccuBrine® Data Manager Support

For additional technical information about using this product, call the AccuBrine® Helpdesk at 1-866-900-SALT (7258) or visit the AccuBrine® Web site (<http://www.accubriner.com>).

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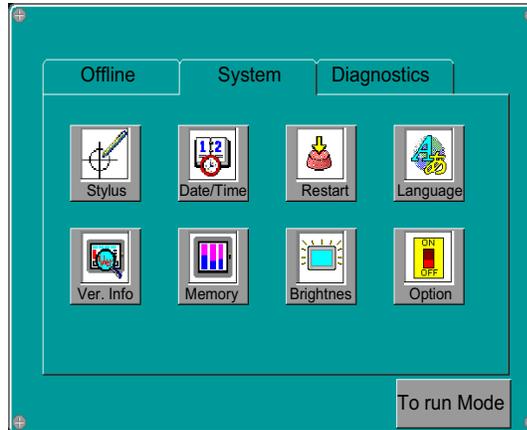
## Display Setup

Enter password 2048, press the HMI config button from the help page (See pg.42), select Date and Time.



### Settings

The following illustration displays System tab on XBT GT4000/5000/6000/7000 series units:



#### Stylus

This setting is not supported for XBT GT1100/1130 series units.

#### Date/Time

The following table describes how to change the date or time on an XBT GT unit.

Step	Action
1	In the Settings menu, touch the System tab.
2	Touch the Date/Time icon.
3	Touch any of the Date or Time fields and a data entry keypad will display. Use this keypad to define the selected date or time setting.

#### Restart

The following table describes how to force an XBT GT unit to restart.

Step	Action
1	In the Settings menu, touch the System tab.
2	Touch the Restart icon.
3	Touch the Restart button to restart the XBT GT unit.

#### Language

The following table describes how to select the language used by the XBT GT system (Settings menu and run-time messages) and user application.

Step	Action
1	In the Settings menu, touch the System tab.

## Display Maintenance: Cleaning the display

Maintenance

---

### Regular Cleaning

---

#### Introduction

The regular cleaning is composed of:

- Cleaning the front panel,
- Cleaning the Gasket and procedures.

#### Cleaning the display

When the surface or the frame of the display gets dirty, soak a soft cloth in water with a neutral detergent, wring the cloth tightly, and wipe the display.

### CAUTION

#### RISK OF EQUIPMENT DAMAGE

Do not use hard or pointed objects to operate the touch-screen panel, since it can damage the panel surface.

Do not use paint thinner, organic solvents, or a strong acid compound to clean the unit.

**Failure to follow this instruction can result in injury or equipment damage.**

#### Cleaning the Gasket

The gasket protects the XBT GT and improves its water resistance.

A gasket which has been used for a long period of time may have scratches or dirt on it, and could have lost much of its water resistance. Be sure to change the gasket at least once a year, or when scratches or dirt become visible.

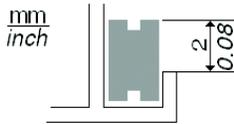
---

**Inserting the Gasket**

The gasket must be inserted correctly into the groove for the XBT GT's moisture resistance to be equivalent to IP65.

The upper surface of the gasket should protrude approximately 2mm [0.08 inch] out from the groove. Be sure to check that the gasket is correctly inserted before installing the XBT GT into a panel.

**Note:** Be sure the gasket's seam is not inserted into any of the unit's corners. Insert the joint only in the straight sections of the groove, preferably in the bottom section. Inserting it into a corner may lead to its eventually tearing.



Maintenance

---

**Periodic Check Points**

---

**Introduction**

To keep your XB GT unit in its best condition, please, check the following points periodically.

- XBT GT Operation Environment,
  - Electrical Specifications,
  - Related Items.
- 

**XBT GT  
Operation  
Environment**

- The operating temperature is within the allowable range (0°C to 50°C) (32°F to 122°F)?
  - The operating humidity is within the specified range (10%RH to 90%RH), dry bulb temperature of 39°C (102°F) or less?
  - The operating atmosphere is free of corrosive gases?
- 

**XBT GT  
Electrical  
Specifications**

- The input voltage is appropriate?
    - DC19.2V to DC28.8V.
- 

**Related Items**

- Are all power cords and cables connected properly? Have any become loose?
  - Are all mounting brackets holding the unit securely?
  - Are there many scratches or traces of dirt on the installation gasket?
-

---

## Replacing the Backlight

---

### Introduction

The XBT GT1000/2000/4000 series units' backlight cannot be replaced by the customer. When the backlights need to be replaced, please contact your local XBT GT distributor.

The XBT GT5000/6000/7000 series units' backlight can be replaced by the customer. Please see the Instruction Sheet that comes with replacement backlights for details on how to replace the backlight. Contact your local XBT GT distributor for more information.

### **WARNING**

#### **RISK OF UNINTENDED EQUIPMENT OPERATION**

Do not create XBT GT touch panel switches for system functions that may cause injury and/or equipment damage.

If the XBT GT unit's backlight burns out and the unit is not set to Standby Mode, the touch panel remains active. If the operator fails to notice that the backlight is burned out and touches the panel, unintended equipment operation can occur.

**Failure to follow this instruction can result in death, serious injury, or equipment damage.**

### How to Determine if the Backlight is Burned Out

If your XBT GT unit's backlight suddenly turns OFF, use the following steps to determine if the backlight is actually burned out:

- If the XBT GT unit's "Backlight Control" is not set and the screen has gone blank, your backlight is burned out.
- If the XBT GT unit's "Backlight Control" is set to Standby Mode and the screen has gone blank, and touching the screen or performing another input operation does not cause the display to reappear, your backlight is burned out.

**Precautions**

When using the XBT GT Unit and a CF Card, follow the precautions below:

- Prior to inserting or removing a CF Card, be sure to turn the XBT GT unit's CF Card ACCESS switch OFF and to confirm that the ACCESS lamp is not lit. If you do not, CF Card internal data may be damaged or lost.
- Check that the CF Card DIP Switches setting are appropriate.
- While a CF Card is being accessed, NEVER turn OFF or reset the XBT GT, or insert or remove the CF Card. Prior to performing these operations, create and use a special XBT GT application screen that will prevent access to the CF Card.
- Prior to inserting a CF Card, familiarize yourself with the CF Card's front and rear face orientation, as well as the CF Card connector's position. If the CF Card is not correctly positioned when it is inserted into the Multit Unit, the CF Card's internal data and the XBT GT unit may be damaged or broken.
- Be sure to use only CF Cards manufactured by Schneider Electric. XBT GT unit performance cannot be guaranteed when using another manufacturer's CF Card.
- Once XBT GT data is lost, it cannot be recovered. Since accidental data loss can occur at any time, be sure to back up all XBT GT screen and CF Card data regularly.

**▲ CAUTION**

**RISK OF EQUIPMENT DAMAGE**

Be sure to follow the instructions given below to prevent the CF Card's internal data from being destroyed or a CF Card malfunction from occurring:

- DO NOT bend the CF Card.
- DO NOT drop or strike the CF Card against another object.
- Keep the CF Card dry.
- DO NOT touch the CF Card connectors.
- DO NOT disassemble or modify the CF Card.

**Failure to follow this instruction can result in injury or equipment damage.**

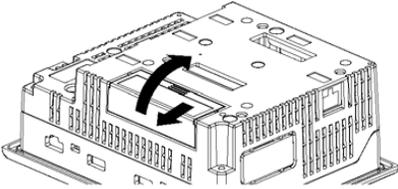
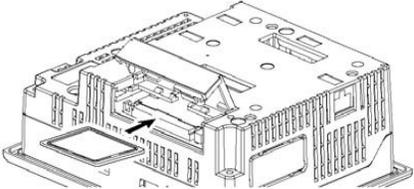
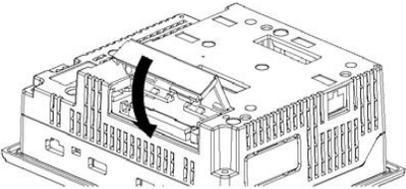
## HMI Display - Compact Flash Memory Card

Remove the rear cover of machines HMI panel to access.

Installation and Wiring

### Inserting the CF Card

Use the following steps to insert the CF Card.

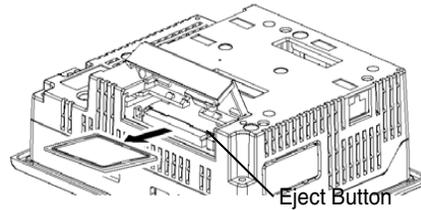
Step	Action
1	Slide the CF Card Cover in the direction shown here, then upwards to open the cover. 
2	Insert the CF Card in the CF Card Slot, until the ejector button is pushed forward. 
3	Close the cover. (As shown). 
4	Confirm that the CF Card Access LED turns ON. You cannot access to the CF Card with the CF Card cover opened. However, if the CF Card is being accessed, the access will be continued even if you open it on the way.

Installation and Wiring

---

**Removing the CF Card**

Simply reverse the steps shown in the previous "inserting CF Card" explanation. Prior to removing the CF Card, confirm that the CF Card Access LED is turned OFF. The following figure displays how to remove the CF Card:



**CF Card Handling**

The CF card has a life expectancy of 100,000 write cycles. Therefore, be sure to back up all CF Card data regularly to another storage media. (100,000 times assumes the overwriting of 500 kilobytes of data in DOS format).

The following table presents two methods to back up data.

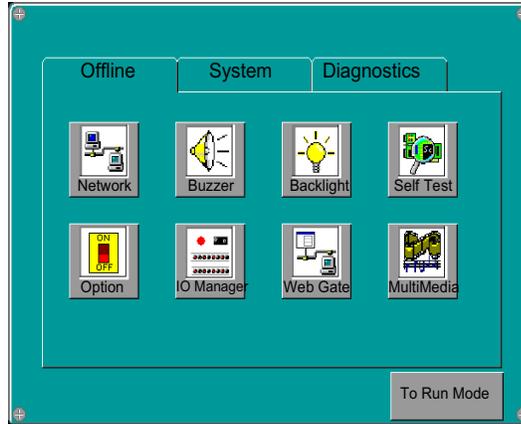
If	Then	And
Your PC is equipped with a PC Card Slot	To view CF Card data on a personal computer, first, insert the CF Card into a CF Card Adaptor XBT ZGADT.	Save data CF Card on the PC.
Your PC is not equipped with a PC Card Slot	Use a standard XBT ZGADT type PC Card or CF Card reader.	Save data CF Card on the PC.

**Note:** Depending on the setup of your PC, it's possible that the Card reader may not operate correctly. The connection between a personal computer and CF Card reader has been tested using an Windows® compatible machine. Check that CF Card reader is correctly installed and configured. Please contact your PC or CF Card reader manufacturer directly for details.

Settings

---

The following illustration shows the Offline tab on XBT GT4000/5000/6000/7000 series units:



**HMI Display Webgate Setup:** Enter password 2048. Select HMI config from same help page.



Settings

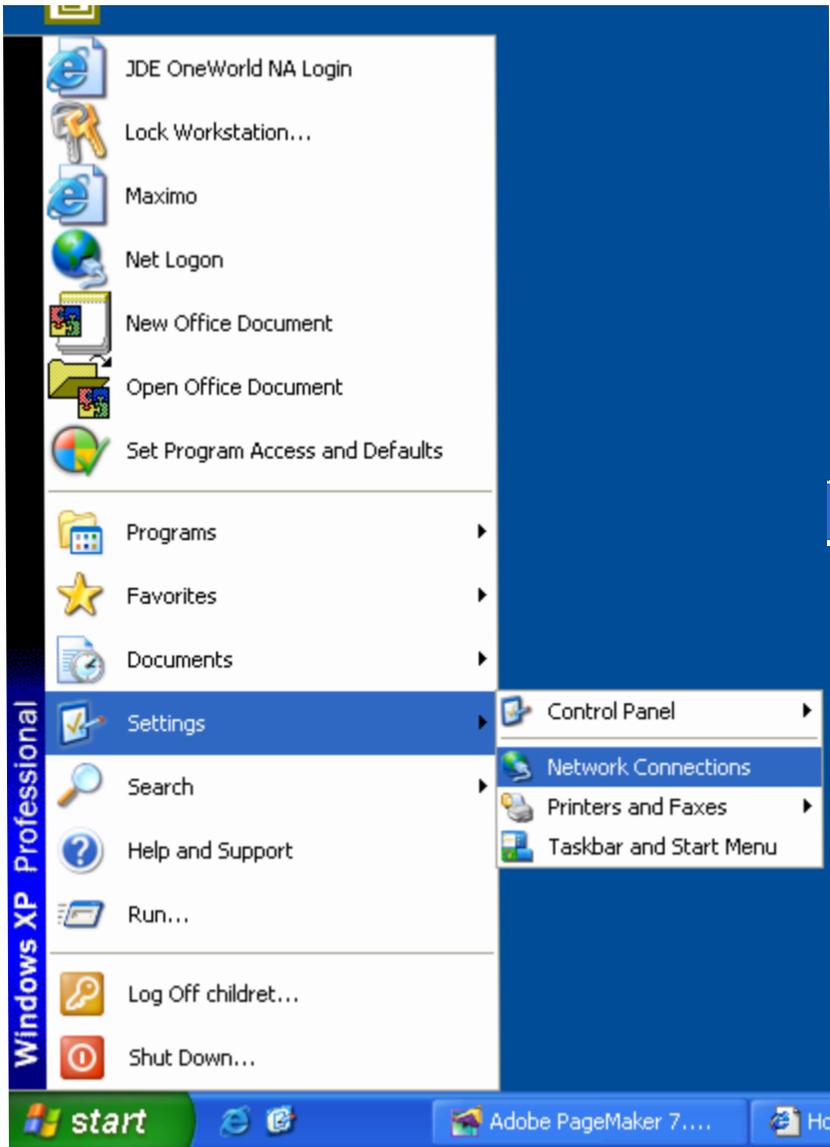
**Network Settings** The following table describes how to change the network settings (IP address) on all XBT GT units (except on XBT GT1100).

Step	Action
1	In the Settings menu, touch the Offline tab.
2	Touch the Network icon.
3	Touch any of the three fields (IP Address, Subnet Mask, or Default Gateway) and a keypad will appear.
4	Enter the desired network addresses.

**Note:** In order for changes to the network settings to take effect, the XBT GT will restart when you touch "To Run Mode" and return to the application.

**Touch Buzzer** The following table describes how to change the buzzer settings on the XBT GT unit.

Step	Action
1	In the Settings menu, touch the Offline tab.
2	Touch the Buzzer icon.
3	Touch the desired buzzer mode. The factory setting is When Press Touch object. <ul style="list-style-type: none"> <li>● None: Selecting this will turn the buzzer OFF.</li> <li>● When Press Touch Object: The buzzer will only sound when a Touch Object is touched.</li> </ul>



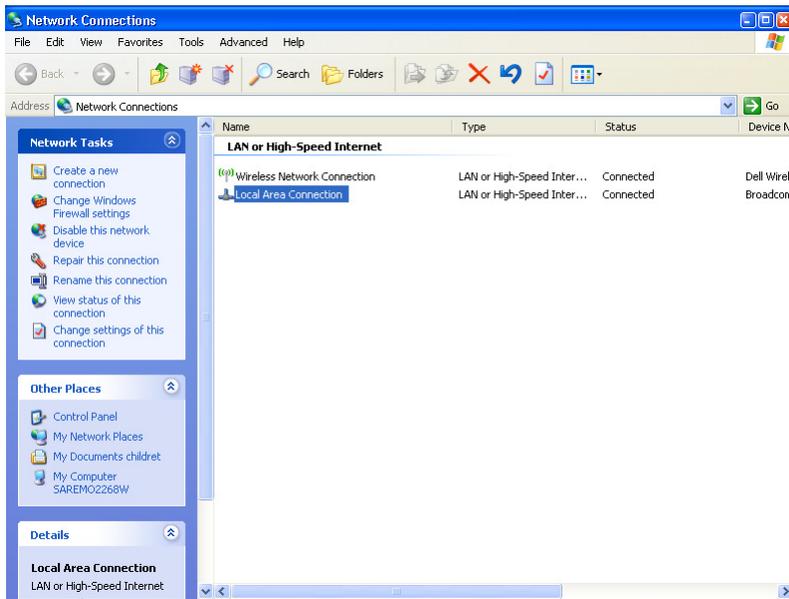
From you computer desktop click start.



Click Settings

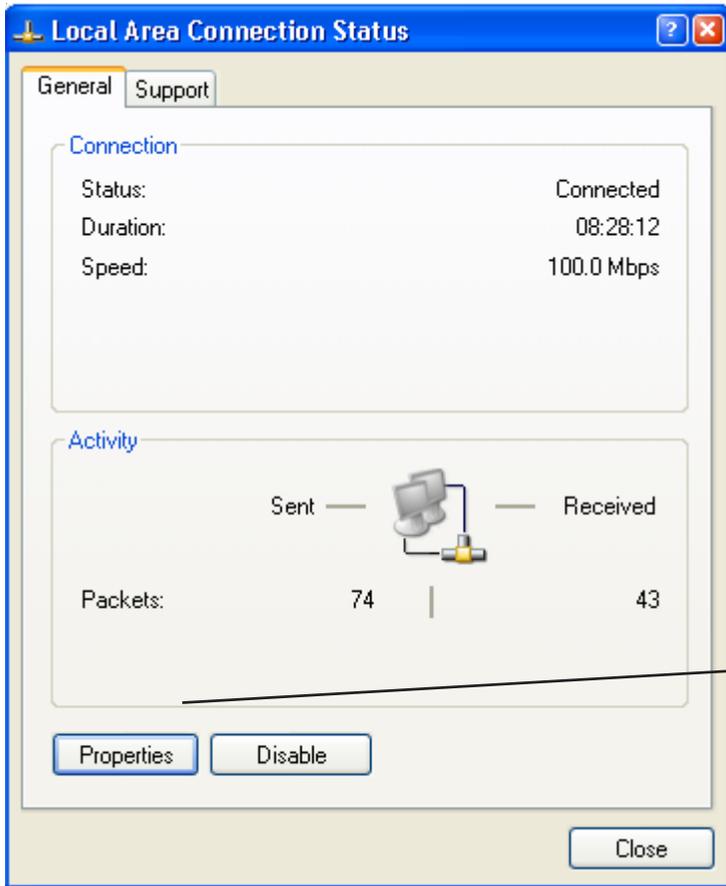


Click Network Connections



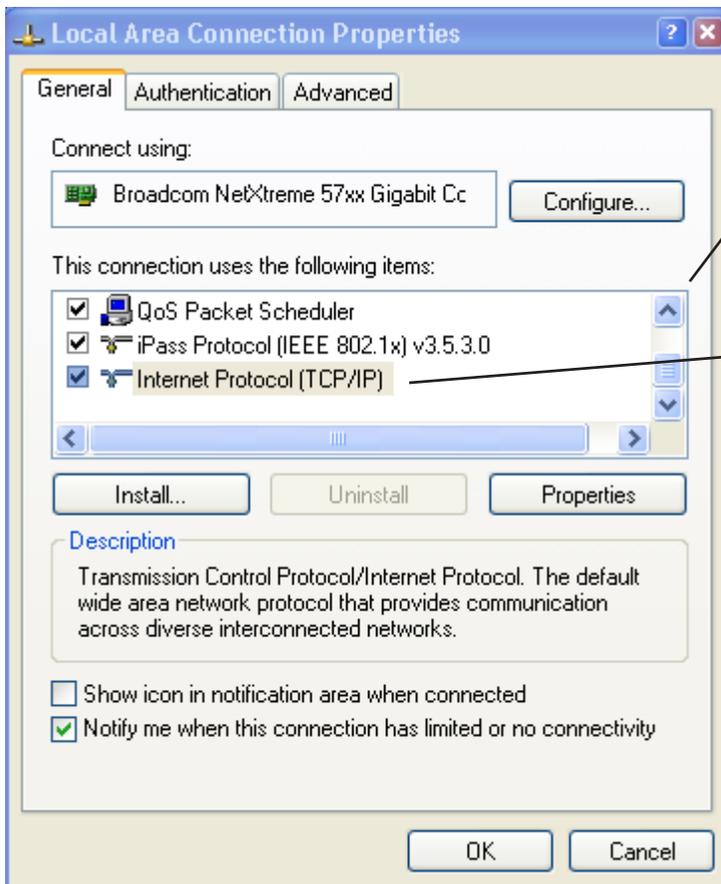
Click Local Area Connection





Click Properties

Properties



Use the slide bar and scroll to the bottom to go to Internet protocol

Internet Protocol (TCP/IP)

double click on internet protocol

Internet Protocol (TCP/IP) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

Obtain an IP address automatically

Use the following IP address:

IP address: 196 . 170 . 86 . 54

Subnet mask: 255 . 255 . 255 . 0

Default gateway: . . .

Obtain DNS server address automatically

Use the following DNS server addresses:

Preferred DNS server: . . .

Alternate DNS server: . . .

Advanced...

OK Cancel

Click on the small circle. *USE the following IP address*

Use the following IP address:

Enter the address of  
IP 196.170.86.54

Subnet Mask: 255.255.255.0

Click OK

OK

Use the following IP address:

IP address: 196 . 170 . 86 . 54

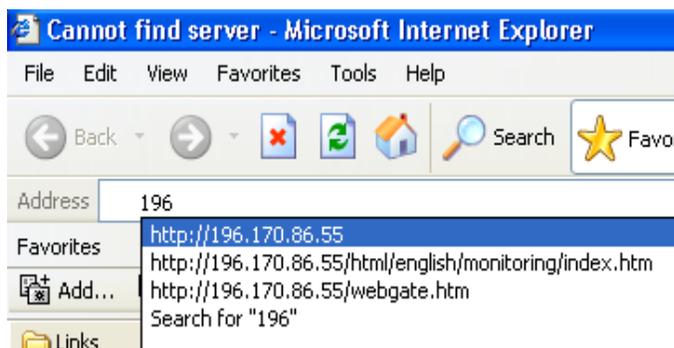
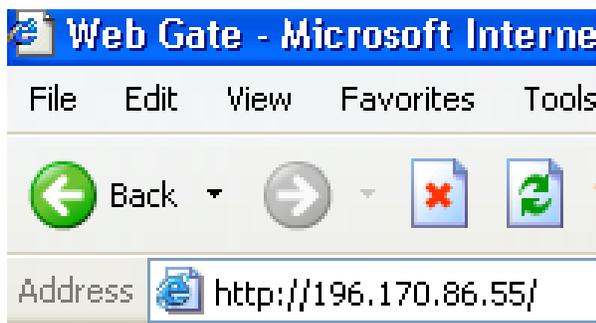
Subnet mask: 255 . 255 . 255 . 0

Default gateway: . . .

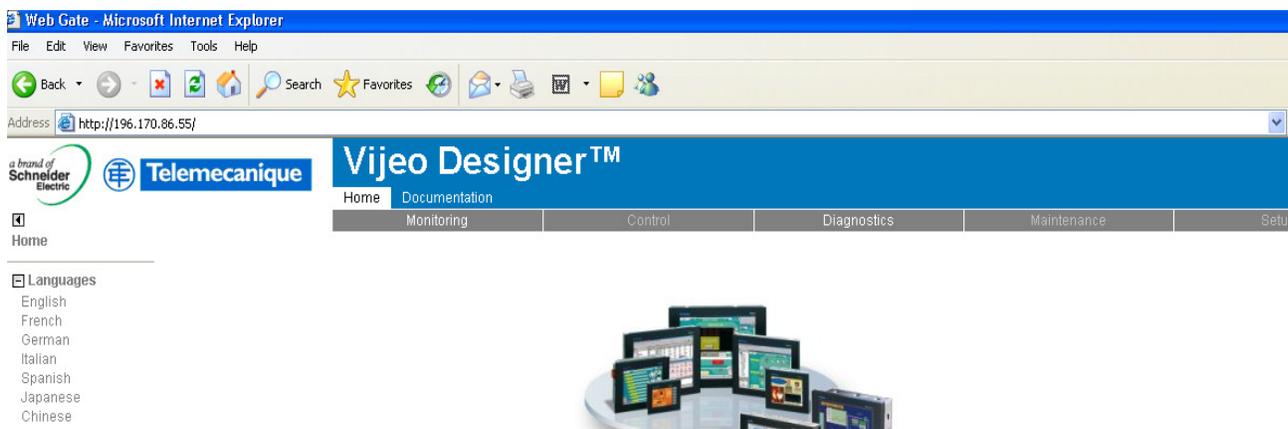
Start windows explorer from the computer desktop by double clicking the internet explorer icon, this will be located at the bottom of your screen.

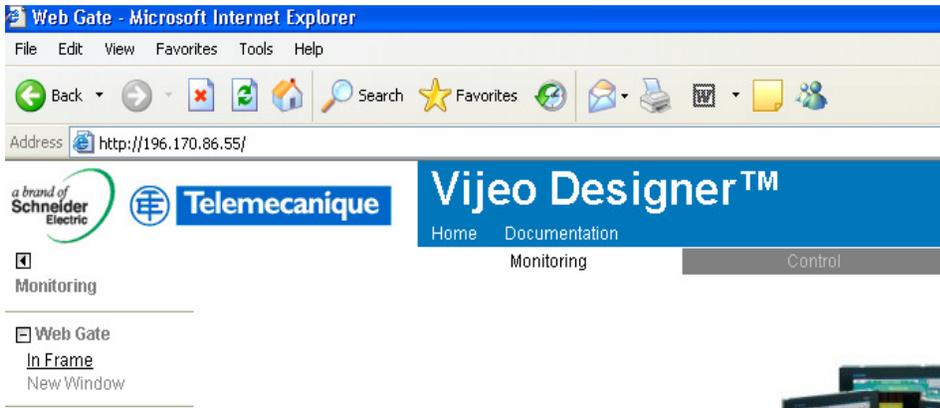


When Windows explorer starts, key in the following address: `http://196.170.86.55/`, (note after you have done this once you may be able to start typing 196... and it will appear automatically).



Webgate and communication between your PC and the desktop unit will begin at this point and you will see the screen below. If you are unable to connect to the HMI, you may have to disable any firewalls on your PC that are preventing the connection from taking place.

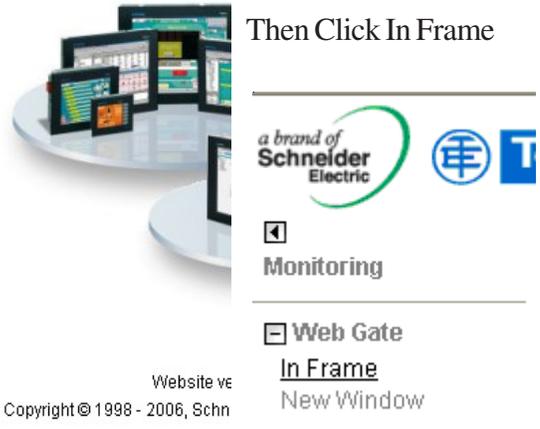




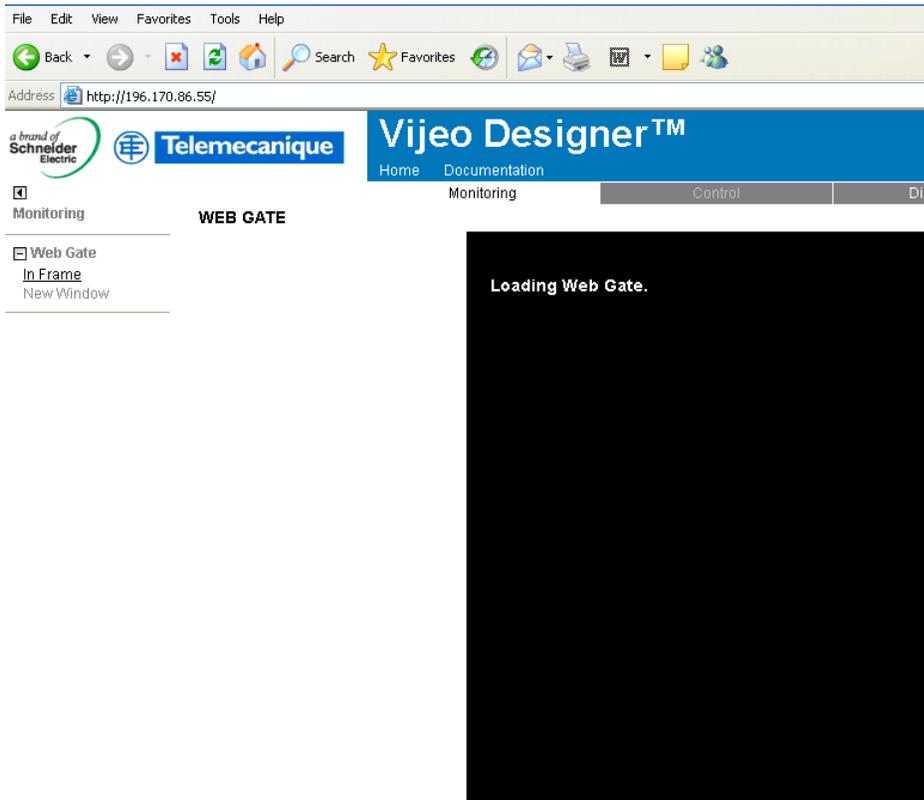
To view what is on the Accubriner desktop:



Then Click In Frame



Website ve  
Copyright © 1998 - 2006, Schn



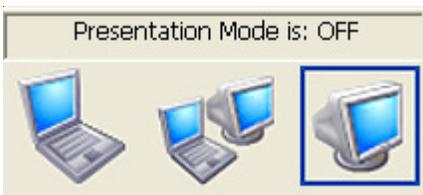
Loading of images will begin.

Right click on the center of the display and a Synchronization button will appear. Click on Synchronization.



At this point what is displayed on the desktop will appear on the computer screen. Use the desktop display to scroll through the windows as you normally would do.

Note: If using a projector, press the blue function button or Fn and F8 button on you computer keypad.

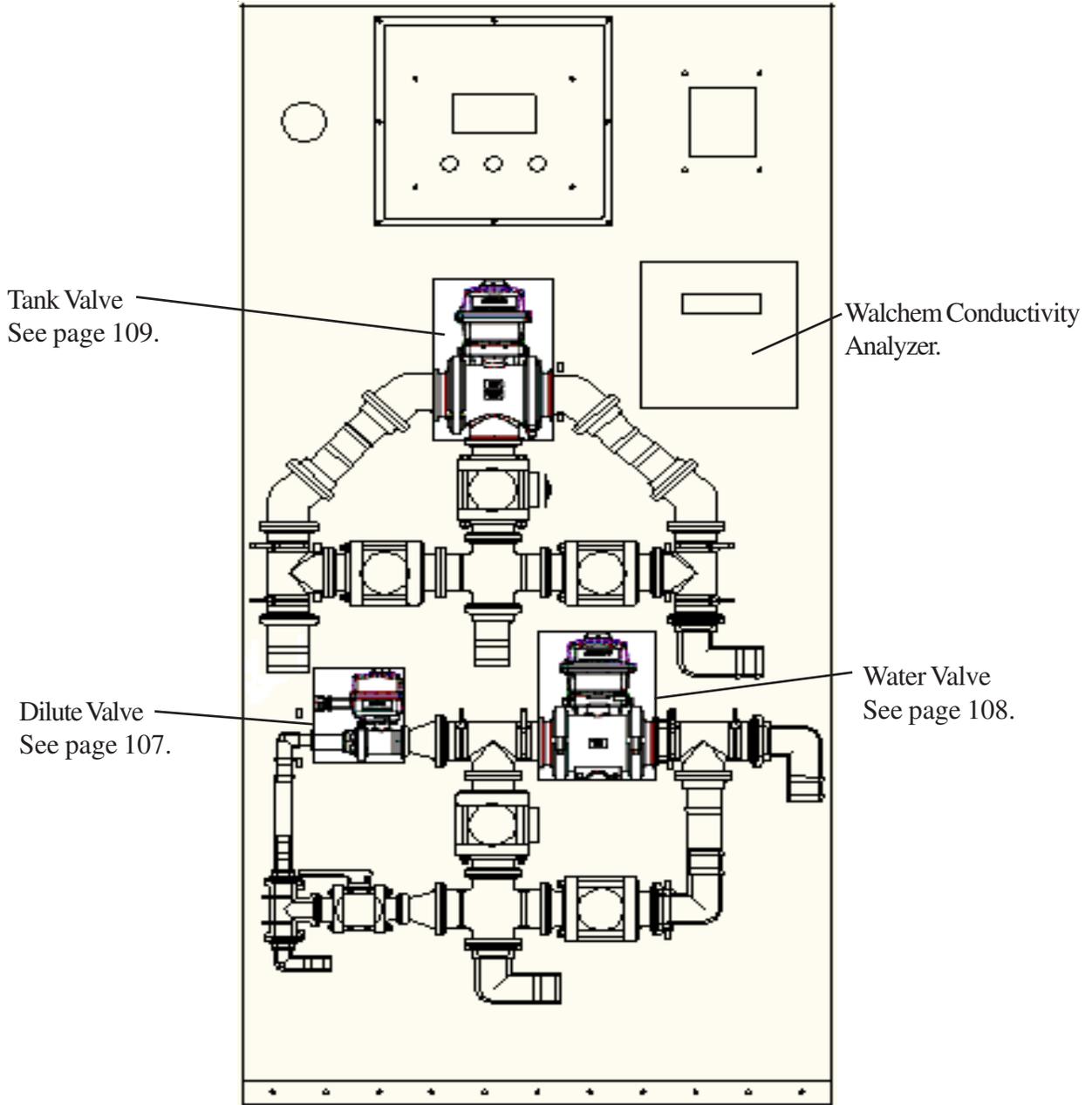


## Accubrine Start-up Procedure

- Before firing the machine for the first time. Make sure that power supply is correct. 220V between the main lugs and 110V between each of the main lugs and neutral. No voltage between neutral and ground.
- Press each of the black fuse holders located on the terminal blocks in the control panel enclosure, to make sure they are seated.
- Ensure settings are loaded into PLC, Enter Password 4096 and go to setup page 1. If values are in, you will see various numeric values. If not, they will all be 0. To reload, go to Home page and press Help, enter password 2048. Press the My Settings button, to go to the My Settings page. Press the Send button to load the factory settings into the setup pages. Return to the Setup pages and verify/turn on appropriate options as machine is equipped. IE: Truck Fill, RFID etc.
- Do not put salt in the Salt Tank at this time.
- Disconnect the hose leading to the Brine storage tank as fresh water will be discharged.
- Close main electrical cover before turning on water supply.
- Verify water supply is off.
- Check and make sure all hose clamps, and manifold clamps are secure.
- Open all 2" valves on Salt Tank and close all 1" and 1/2" cleanout valves.
- Have all valves in normal Automatic position on main panel. All valves on main control panel should be in the vertical position.
- If equipped with modular panel, place all valve handles in the automatic position.
- Open manual dilute valve on main panel. This helps to prime the pump.
- Turn on water supply and brine maker water supply valves and begin to fill salt tank. Check for leaks. Fill tank to grate. Monitor water pressure when all valves are closed, and as main water valve cycles. For optimum performance, pressure should not exceed 40 PSI static at any time to include spike and hammer (80 PSI max.). If this occurs install a pressure regulator.
- Put machine in Simulate Mode: Enter password 4096 then ESC to Home page then press Mode then press the Simulate Mode button.
- Start a batch: Home page, press Batch button, key in 150 for quantity. If equipped with additive, select 0 for the ratio and select tank 1 (Brine).
- Once pump starts and is primed close the manual dilute valve on main panel.
- Check for leaks.
- Reconnect hose leading to the Brine Storage tank.
- Put machine in Normal mode: Enter password 4096 then ESC to Home page then press Mode, then press Normal Operation Mode. press the Home button.
- Place salt in hopper and produce a batch.

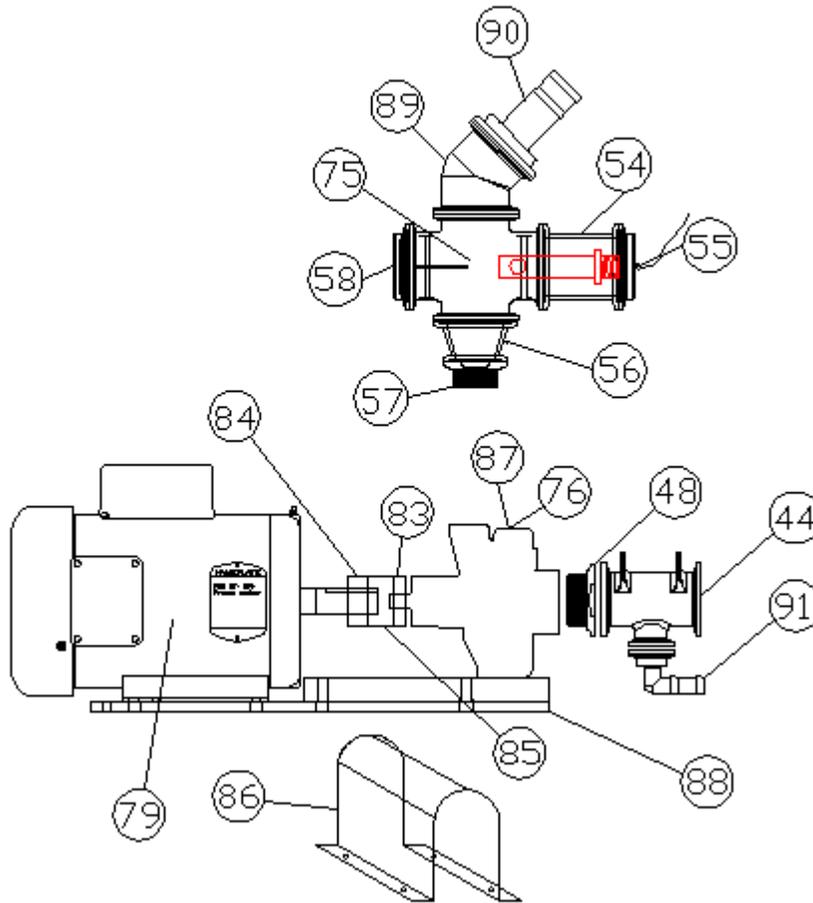
## Parts: Main control panel, Rear View

Note: Circled part numbers refer to the same parts/HMI callout numbers available on the HMI touch screen. These are listed on the Complete Parts pages at the back of this manual.

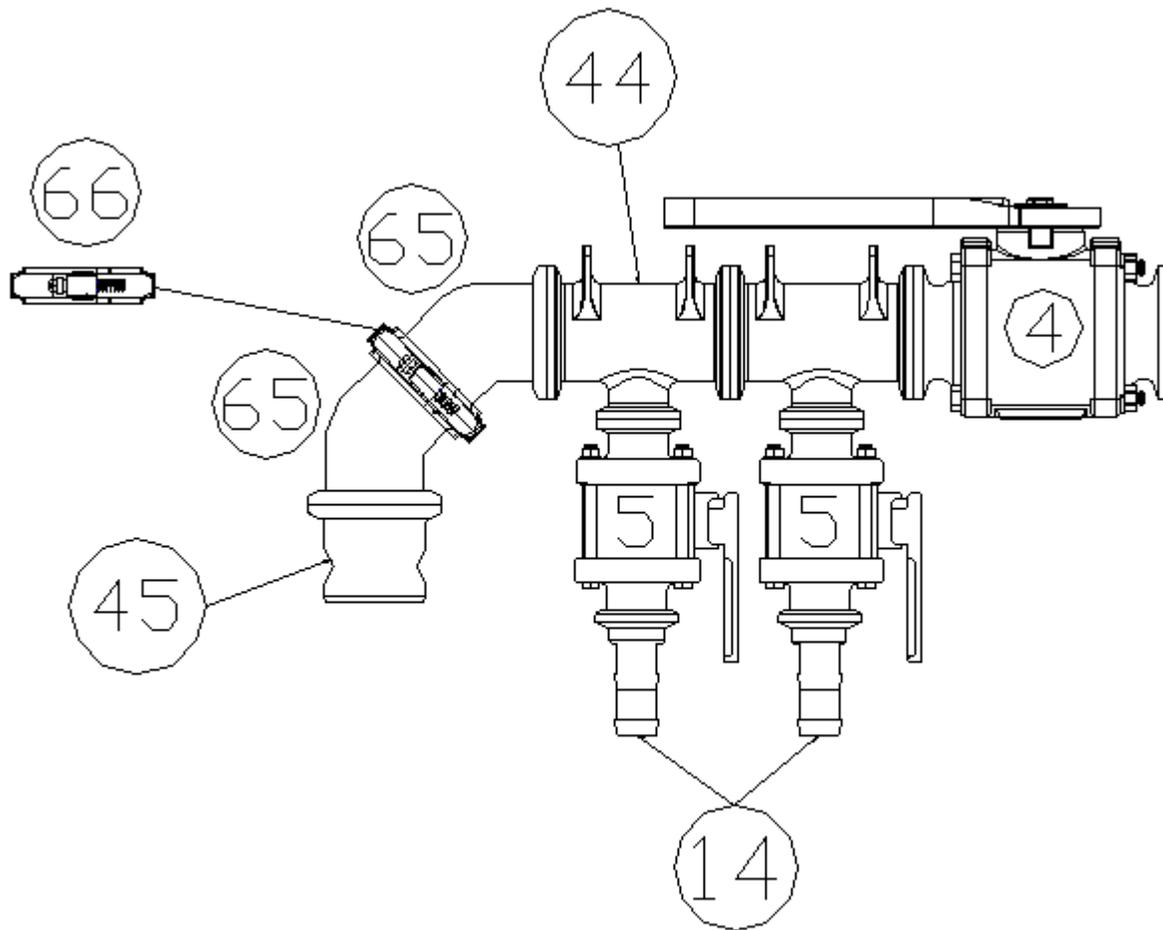


## Pedestal Pump Inlet and Outlet with Conductivity Sensor Assembly

Pedestal Pump w/ Inlet & Outlet Connections

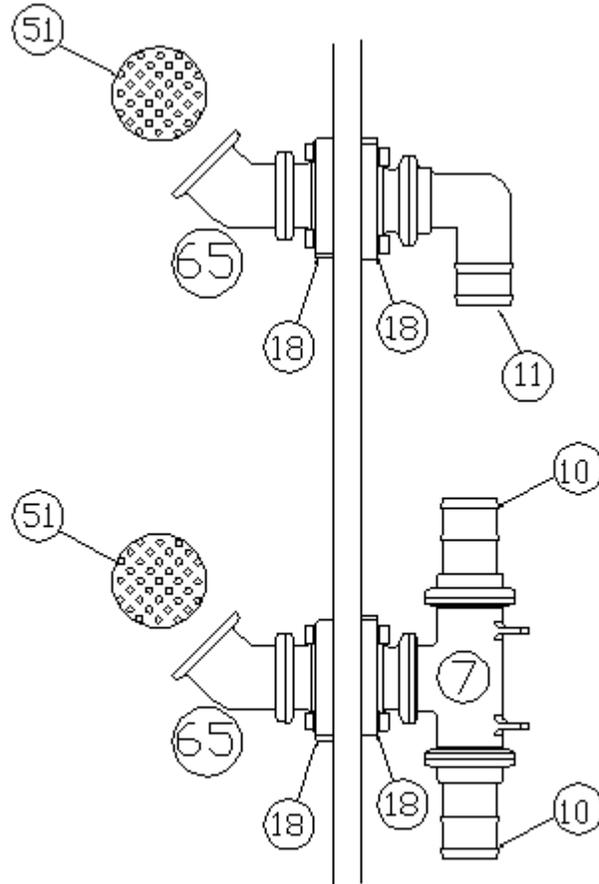


**Salt Tank Water Inlet Valve assembly.**



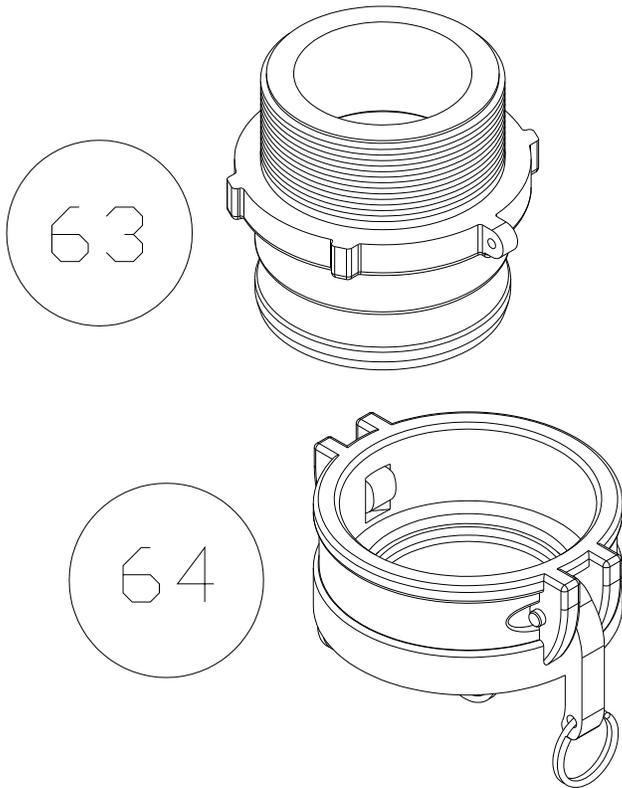
Salt Tank / Water Inlet Valve Bank

## Salt Tank Water Spray Assembly



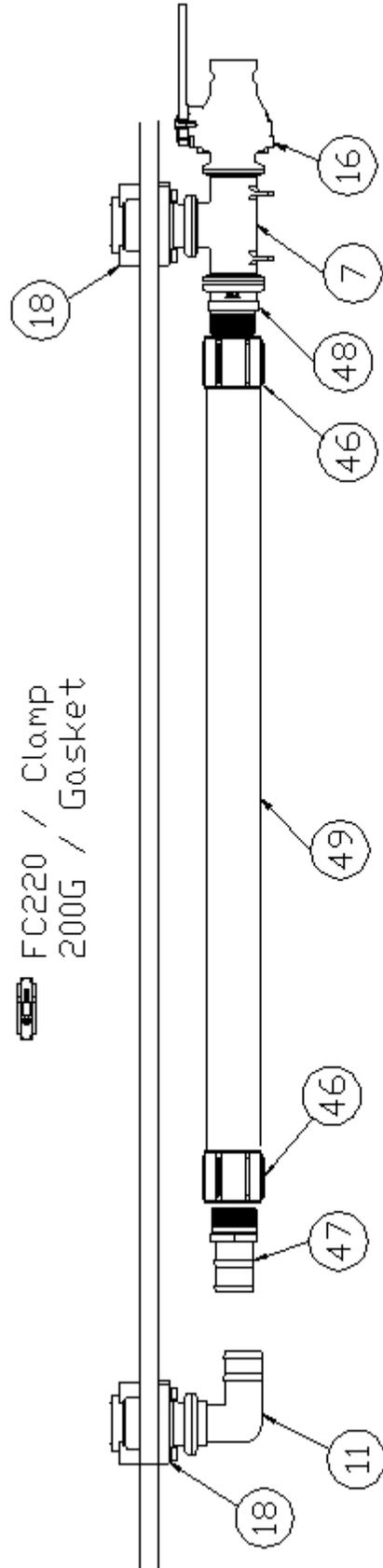
Salt Tank Water Spray Assembly

## Salt Tank Drain Kit - Supplied With Salt Tank



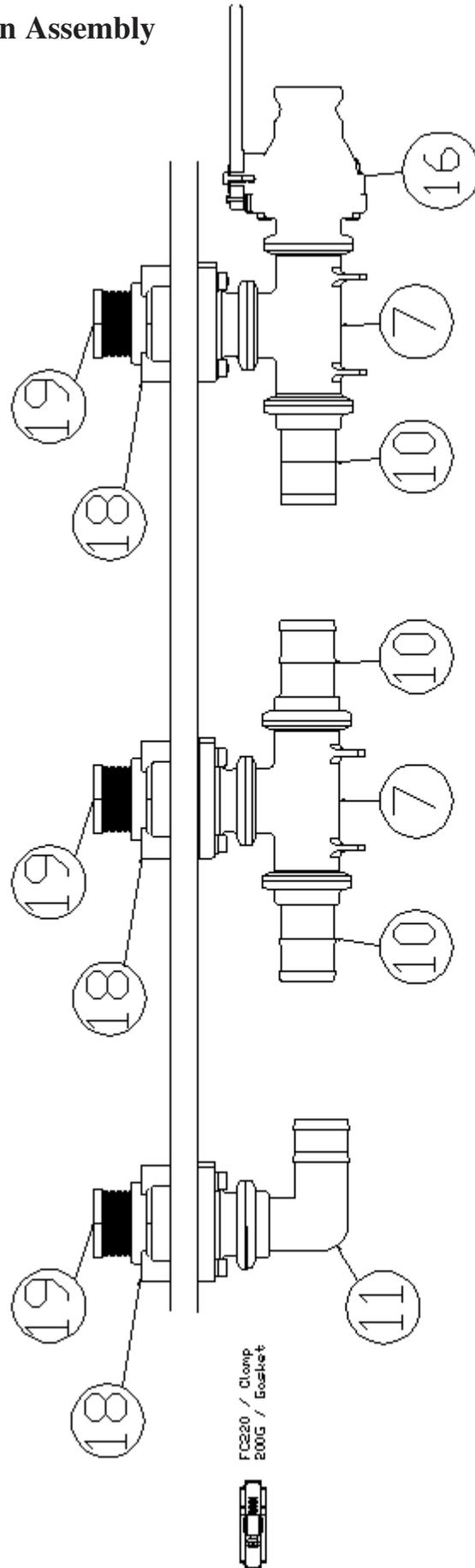
Salt  
Tank  
Drain Kit  
BM-039

### Salt Tank Suction Tube Assembly



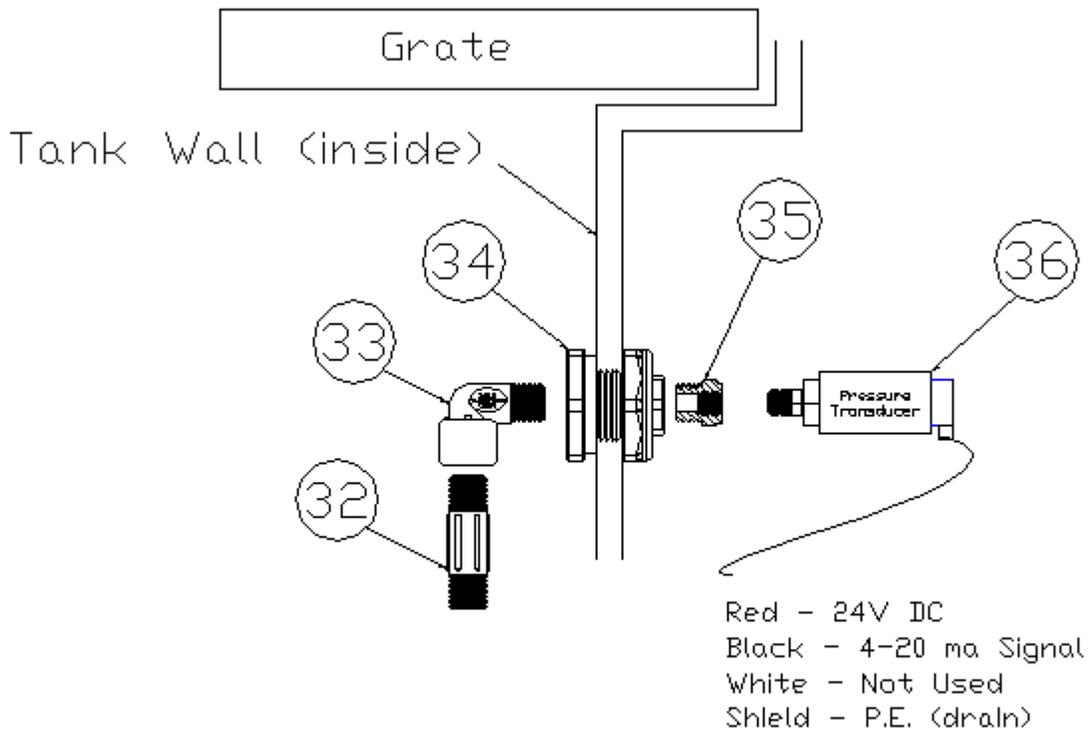
Salt Tank / Suction  
Tube Assembly

### Salt Tank Return Assembly



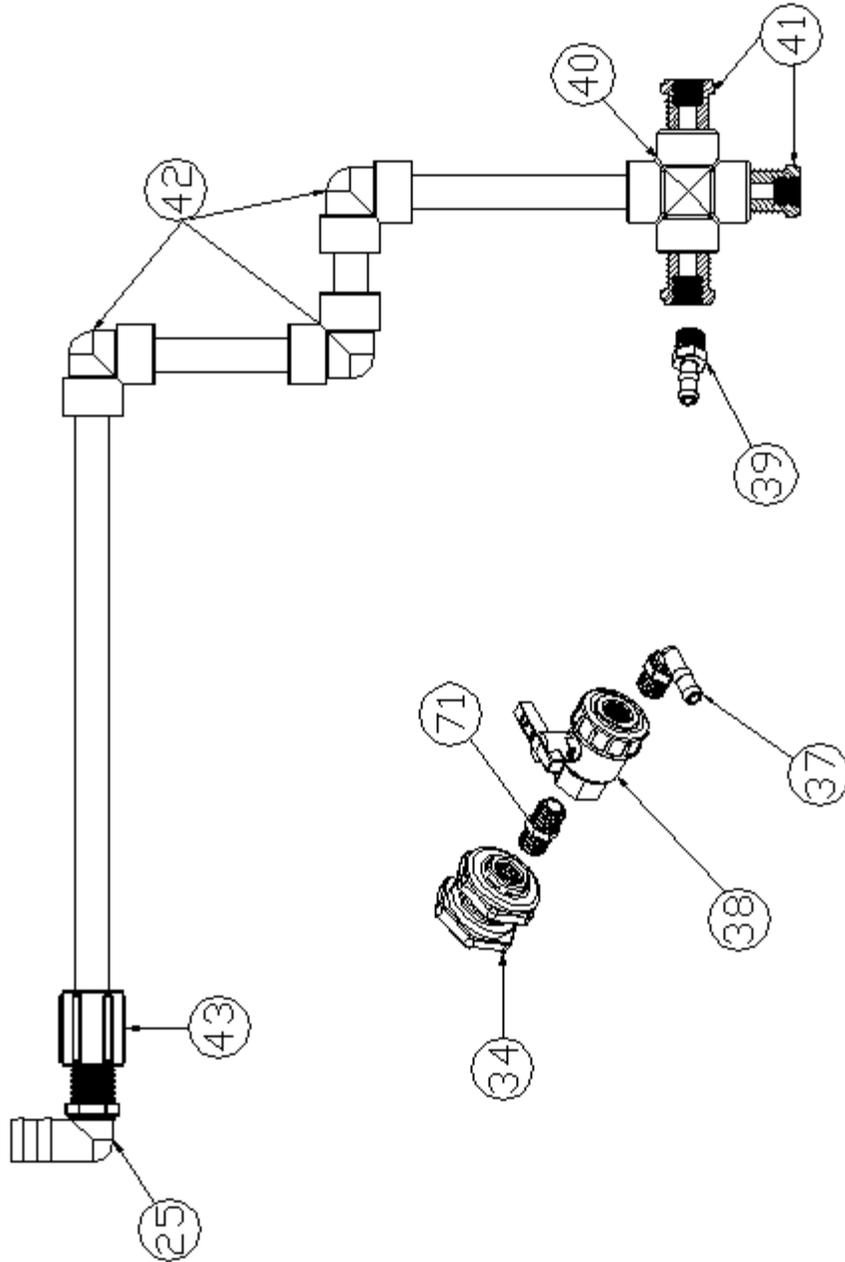
Salt Tank Return Assembly

## Salt Tank Level Sensor



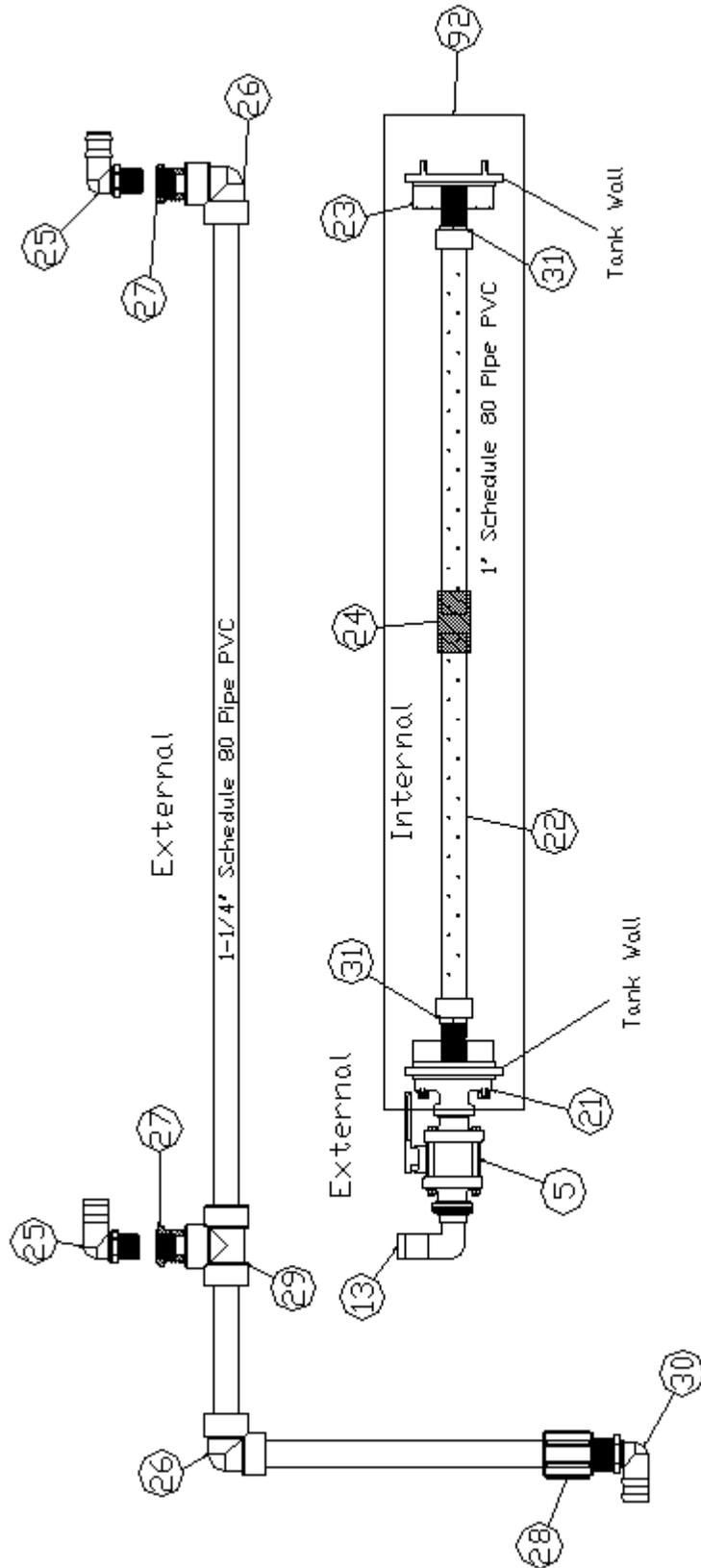
Salt Tank / Level Sensor

## Salt Tank Sump Spray Assembly



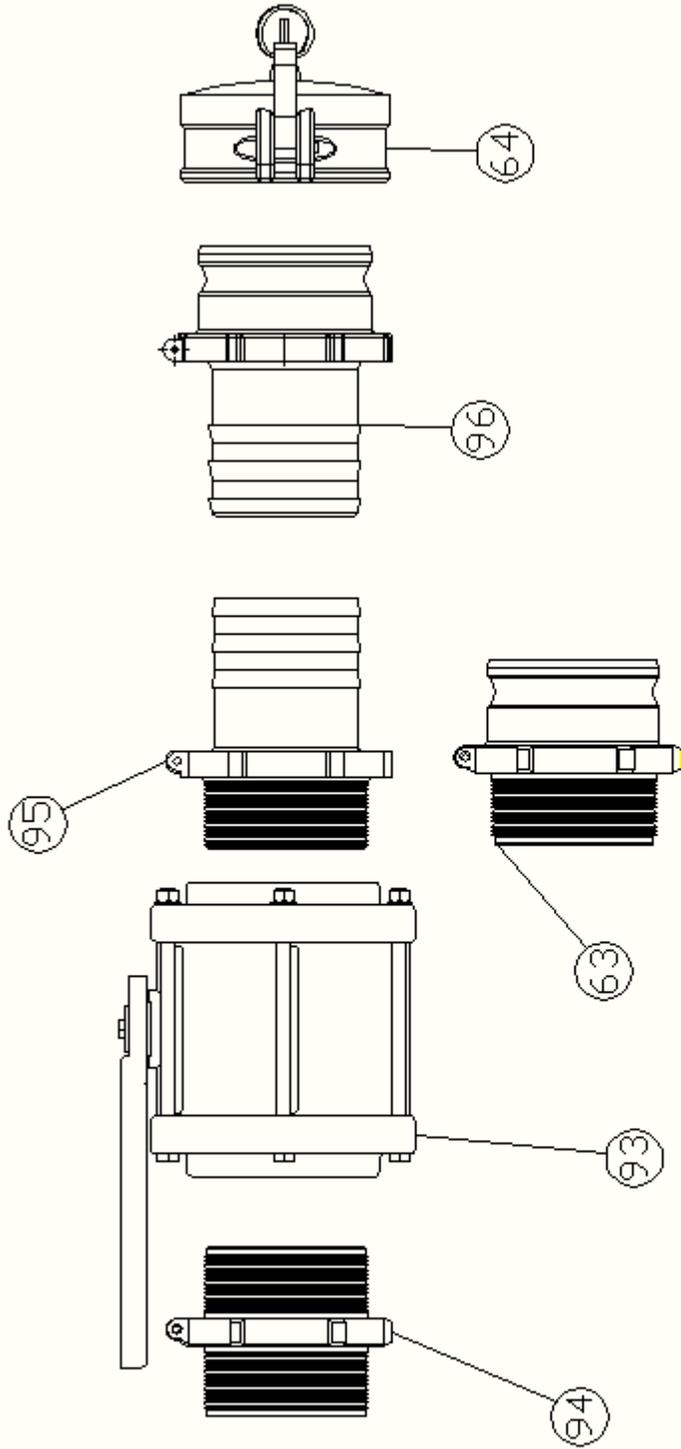
Salt Tank / Sump Spray

**Salt Tank Side Flush**



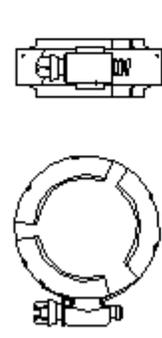
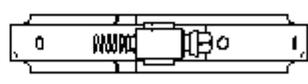
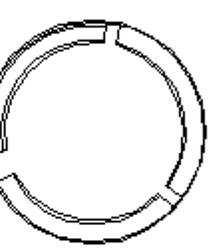
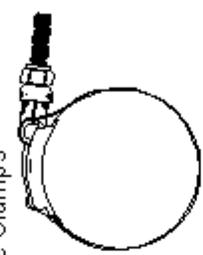
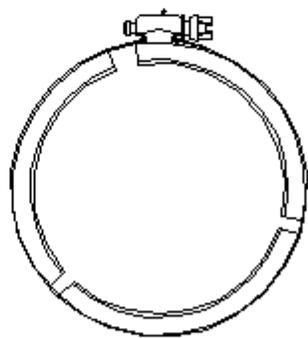
Salt Tank / Side Flush Internal & External

### Salt Tank Drain Kit Option

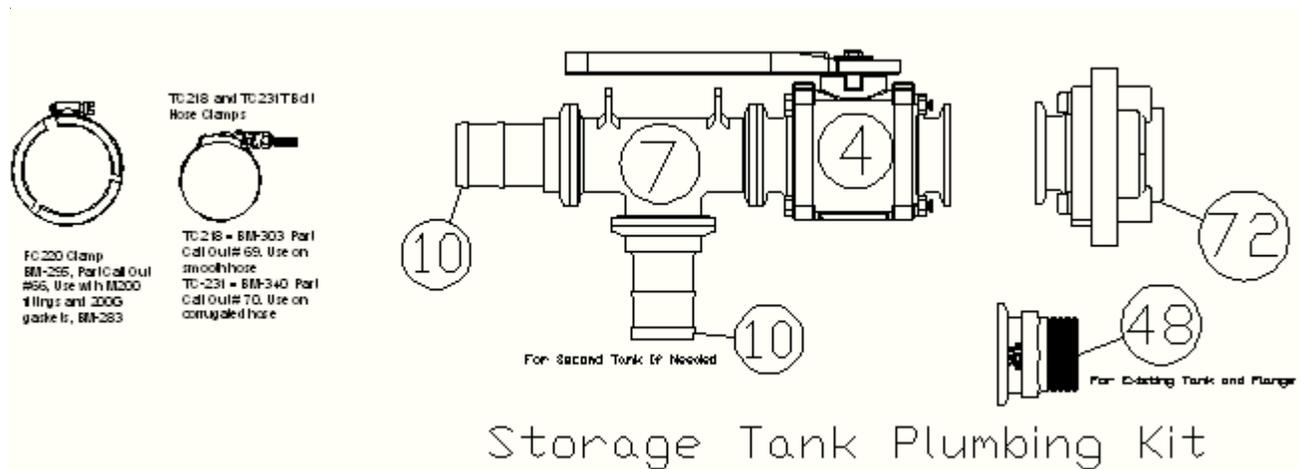


Salt Tank Drain Kit Option

## Clamps and Required Gaskets

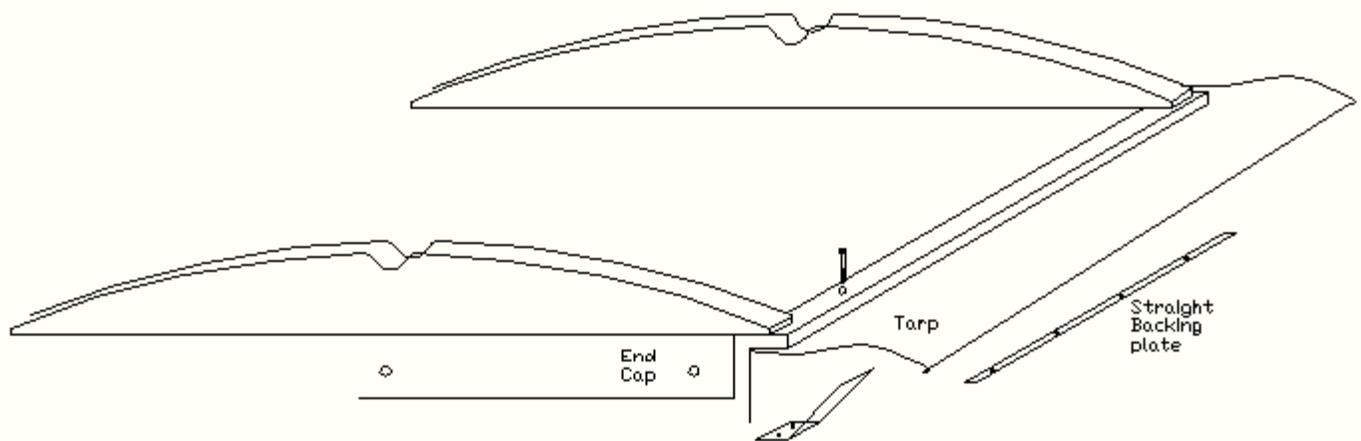
<p>FC100 Clamp          BM-296, Part Call Out #67          Use with M100 Fittings and          M100G gaskets, BM-297</p>				<p>FC220 Clamp          BM-295, Part Call Out          #66, Use with M200          fittings and 200G          gaskets, BM-283</p>
<p>TC218 and TC231T Bolt          Hose Clamps</p>		<p>TC218 = BM-303 Part          Call Out #69. Use on          smooth hose          TC-231 = BM-340 Part          Call Out #70. Use on          corrugated hose</p>		<p>FC300 Clamp          BM-281, Part          Call Out #68          Use with M300          fittings and 300G          Gaskets, BM-282</p>

## Storage Tank Plumbing Assembly



## Roll Tarp Cover

Cargill BM# - 244

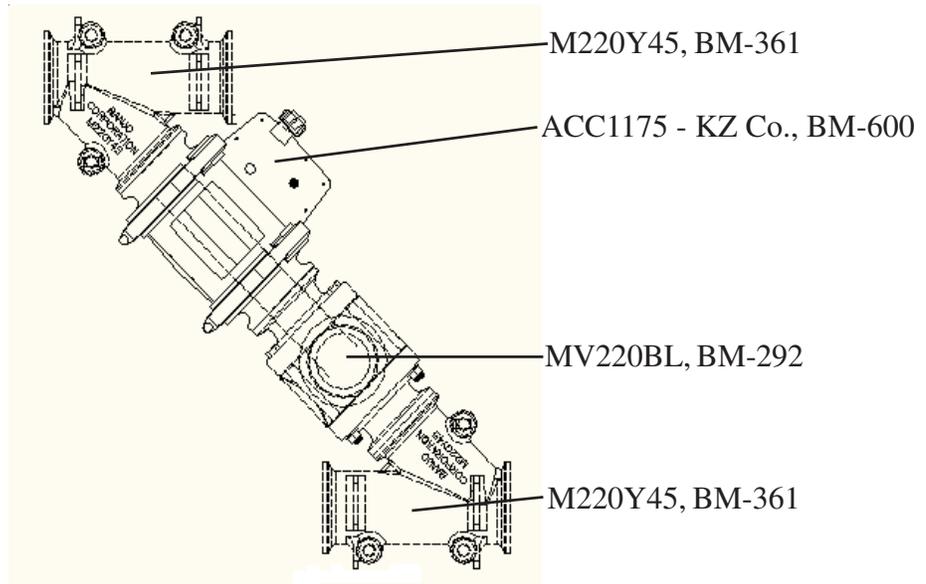


Position end cap in the center of salt tank. Attach Endcap with flange to inside of tank. Drill (3)  $\frac{1}{8}$ " dia. holes per end cap to attach, use supplied  $\frac{1}{2}$ " bolt and flange nuts to attach.

Place tarp under edge of salt tank. Position 3 straight backing plates on bottom side of tarp and drill upward through hole in plate, tarp and tank flange and attach with  $\frac{1}{2}$ " bolts. Note: Bolt head should be upward with nut on bottom side of flange. Start in the center and work outwards. Use (2) angled mountings on outside ends of tank. Note: Upward edge of angled bracket acts as a stop for tarp when rolled up in open position.

Place J hook (supports crank handle) on end of tank where crank is located. Mount directly under upper edge of salt tank left to right center of tank. Drill  $\frac{1}{8}$ " dia. hole and attach with bolt and nut.

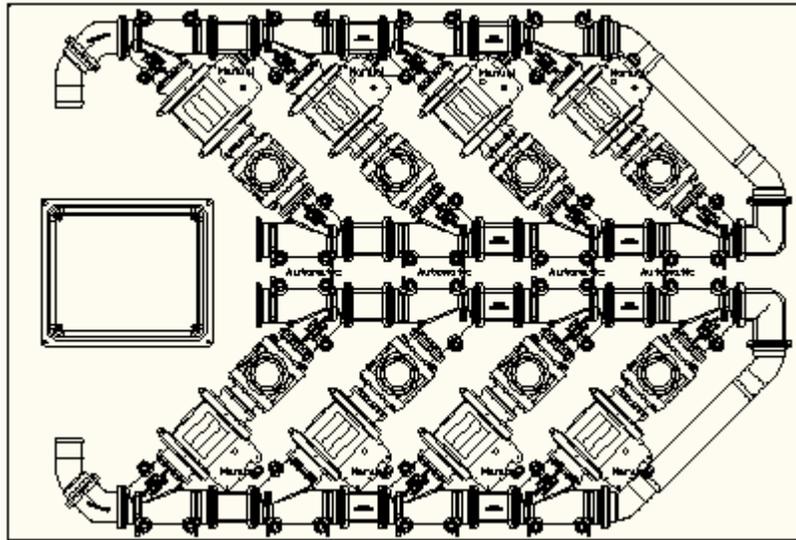
### 4 X 4 Modular Panel and Valve Module Example



### BM-069, Modular Plumbing Module

4 X 4 Sub Panel (4 Discharge Valves and 4 Suction Valves)

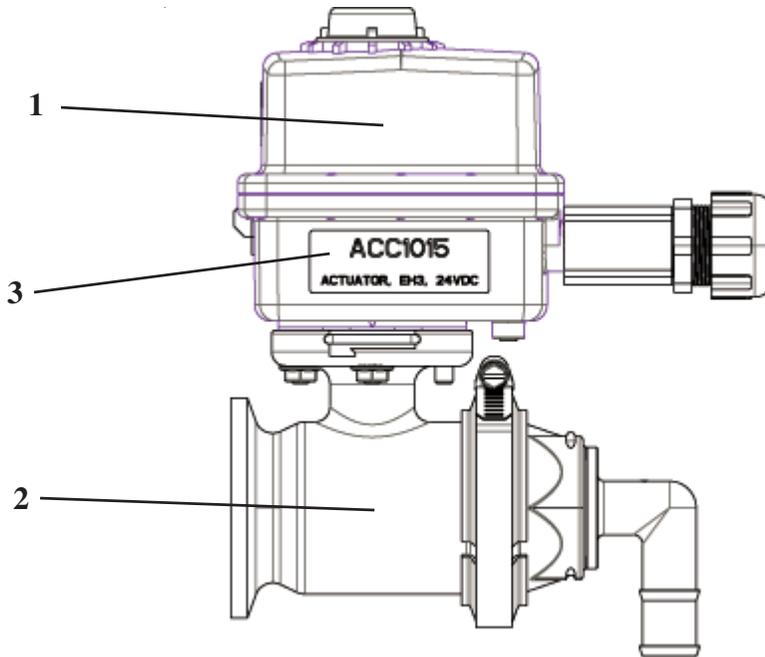
Discharge Valves from pump to  
Storage Tanks & Truck Fill



Suction Valves from Salt tank &  
Storage Tanks to Pump

**Dilute Valve Assembly, BM -599, KZ CO. #ACC1105**

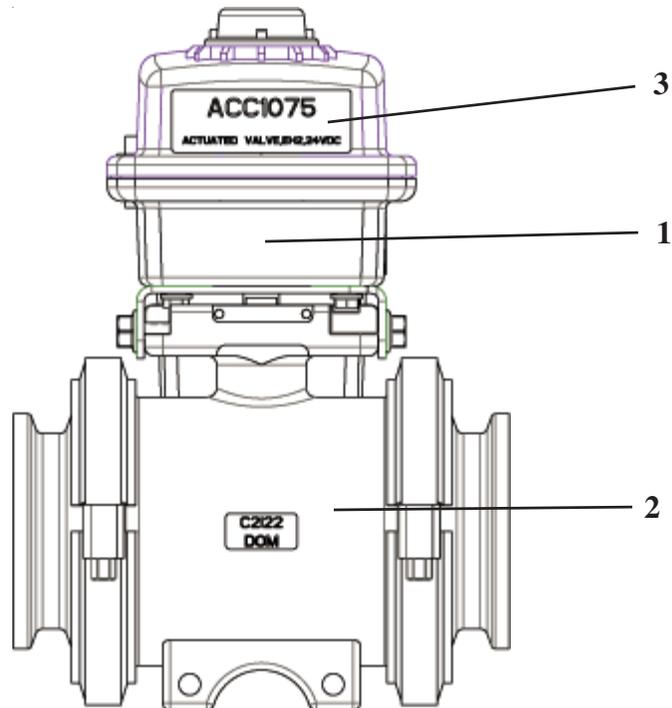
HARNESS PINOUT:  
 BLACK (GND)  
 BLUE (COM, USER SUPPLIED FEEDBACK, POW+)  
 WHITE (SIGNAL 1, 24 VDC+ to OPEN)  
 RED (24VDC POW+)  
 ORANGE (COM SIGNAL @ OPEN)  
 PURPLE (COM SIGNAL @ CLOSED)  
 GREEN (UL LISTED GND)



3	1	EH-502	LABEL, EH ACTUATOR, 2.5" X 1", THERMAL TRANSFER, WHITE
2	1	C2F-008	VALVE SUB ASSY, QX4 2-WAY, 1" HP
1	1	ACC1015	ACTUATOR, EH3, 3.5 SEC @ 24VDC
DET	QTY	PART NUMBER	DESCRIPTION

**2 Way On/Off (Water & Subpanel) Valve Assembly, BM-600, KZ CO.  
 #ACC1175**

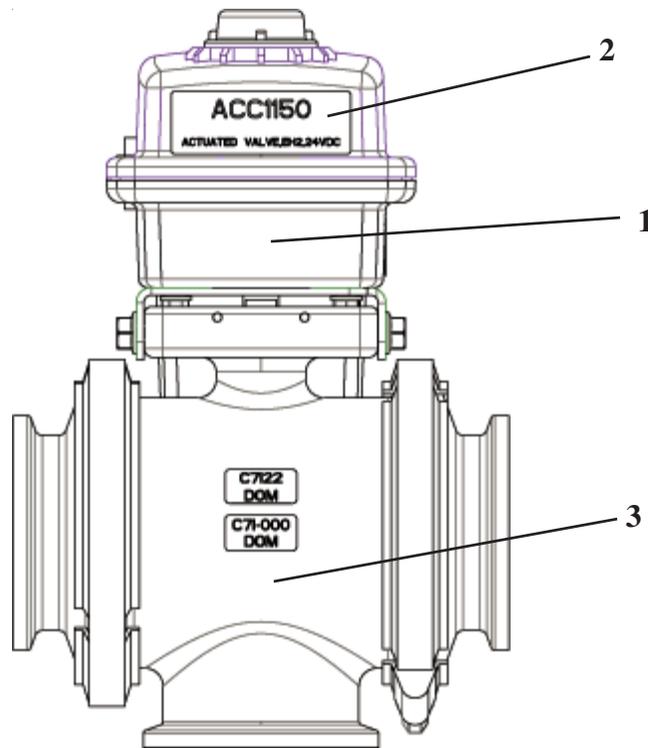
HARNESS PINOUT:  
 BLACK (GND)  
 BLUE (COM, USER SUPPLIED FEEDBACK, POW+)  
 WHITE (SIGNAL 1, 24 VDC+ to OPEN)  
 RED (24VDC POW+)  
 ORANGE (COM SIGNAL @ OPEN)  
 PURPLE (COM SIGNAL @ CLOSED)  
 GREEN (UL LISTED GND)



3	1	EH-502	LABEL, EH ACTUATOR, 2.5" X 1", THERMAL TRANSFER, WHITE
2	1	C222	VALVE KIT, EH2, 2" FP, 2-WAY, 2" FP FLG
1	1	ACC1030	ACTUATOR,EH2,SOLID STATE 4 SEC@24VDC
DET	QTY	PART NUMBER	DESCRIPTION

### 3 Way Bottom Load (Tank)Valve Assembly, BM-601, KZ CO. #ACC1150

HARNESS PINOUT:  
 BLACK (GND)  
 BLUE (COM, USER SUPPLIED FEEDBACK, POW+)  
 WHITE (SIGNAL 1, 24 VDC+ to OPEN)  
 RED (24VDC POW+)  
 ORANGE (COM SIGNAL @ OPEN)  
 PURPLE (COM SIGNAL @ CLOSED)  
 GREEN (UL LISTED GND)

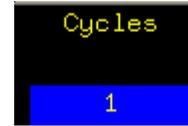
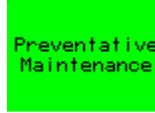


3	1	C7122	VALVE KIT, EH2, 2" FP, 3-WAY, 2" FP FLG
2	1	EH-502	LABEL, EH ACTUATOR, 2.5" X 1", THERMAL TRANSFER, WHITE
1	1	ACC1060	ACTUATOR,EH2,SOLID STATE 4 SEC@24VDC, 90DEG
DET	QTY	PART NUMBER	DESCRIPTION

## Preventative Maintenance Schedule

This Preventative Maintenance page monitors and records number of cycles for the actuated valves, and hours of operation for the pump head and motor for the main control panel and auxiliary recycled water pump if applicable.

To access the Preventative Maintenance page go to the Help page and press the Preventative Maintenance button.



Valve Function	Cycles	Life Cycle	Reset
Water Valve	1	250000	Reset
Dilute Valve	15	250000	Reset
Tank Valve	59	250000	Reset
Modular Salt Suction	22	250000	Reset
Modular Brine Storage Suction	1	250000	Reset
Modular Blend Storage	3	250000	Reset
Modular Additive 1 Suction	13	250000	Reset
Modular Additive 2 Suction	1	250000	Reset
Modular Additive 3 Suction	0	250000	Reset
Modular Truck Fill	22	250000	Reset
Modular Brine Storage Discharge	23	250000	Reset
Modular Blend Discharge	3	250000	Reset

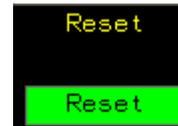
The blue box indicates the number of Actual cycles or hours each valve or pump/motor has reached.



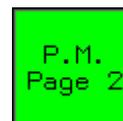
The Life Cycle box indicates the number of Expected cycles for each valve or number of hours of operation before routine periodic maintenance should be conducted. This may be inspection, rebuild, or even replacement. The life cycles for valves is expected to be 250,000. The hours for the pump head is expected to be 500, and the hours for the motors is expected to be 1000.



Valve Function	Cycles	Life Cycle	Reset
Modular Additive 1 Discharge	1	250000	Reset
Modular Additive 2 Discharge	1	250000	Reset
Modular Additive 3 Discharge	0	250000	Reset
Recycled Water	0	250000	Reset
Pump Motor main panel	1	1000	Reset
Pump Head main panel	1	500	Reset
Pump Motor recycle Water	0	1000	Reset
Pump Head Recycle Water	0	500	Reset
Pump Motor high Volume Loadout	0	1000	Reset
Pump Head high Volume Loadout	0	500	Reset



The Reset box when pressed, will reset the actual number of cycles or hours to 0 when inspection, rebuild, or replacement has taken place.



Press the P.M. Page 2 button to access the second page of valves, pumps, and motors.

## Trouble Shooting Guide

- Valve Failure - could affect these valves:
  - Water Valve - Open
  - Tank Valve – To Return
  - Optional valves for Remote Fill and Additive injection, Recirculation.
    - The system monitors the valve when in the deenergised position. When the valve change position contact does not have +24 VDC, the valve goes to its normal state (white wire to actuator is not energized). When alarm is witnessed, this may be caused by any of the following scenarios.
      1. Power supply failure- Generally several alarms may be activated. All actuators operate on a 24 VDC circuit, if the power supply fails then a valve actuator failure may be present.
      2. Valve circuit has failed – Wire has come loose:
        - Refer to wiring diagram to trace to terminals and check all connections.
      3. Fuse Blown –
        - Use wiring diagram or trouble shoot from the display to find possible fuses. Note: A blown fuse illuminates red when it has failed, the fuse holder must be energized to illuminate red depending on the state of the machine. These circuits may or may not be energized, therefore physically check all fuses.
      4. Actuator failed to change position due to actuator failure.
        - Replace actuator
      5. Valve actuator is changing position but valve position has failed.
        - Disable alarm and repair or replace actuator.

### Fault: 4-20ma Signals

1. Check wiring, and make sure that the signal wire from sensor terminal 2 of the connector at the sensor is attached to the + terminal of the PLC. Check that terminal 1 to the plug has + 24VDC. Refer to wiring diagram sent with machine.
2. If Wiring is correct: With the machine energized remove the black plug where the wires land into the PLC and then reconnect.
3. Reset fault and attempt another batch.

## Pump Thermal Overload

The pump is activated ON to the run state via a motor starter with a built in thermal overload. This thermal overload protects the electric motor from excess current draw.

1. Improperly set thermal overload – Adjust thermal overload to amperage rating on motor do not exceed 110% of motor rating.
2. Low voltage from supply – Since  $I = E/R$  as voltage drops, current will increase. Low voltage at peak periods of use on an electric grid or within the structure may cause this voltage drop. Solutions may be to isolate circuits to balance the electric load from a service panel or it might be possible to convert a system to a 3 phase motor in extreme cases.
3. Pump motor is drawing excess current –  
Wear and tear on motor may cause excess friction thus leading to overpower requirements. This is usually witnessed by a squeak or growling noise from the motor. Locked or jammed impeller on the pump head.  
Pump pumping heavy liquid – with use of the additive injection system, the product being pumped may be heavier than the pump was designed for.

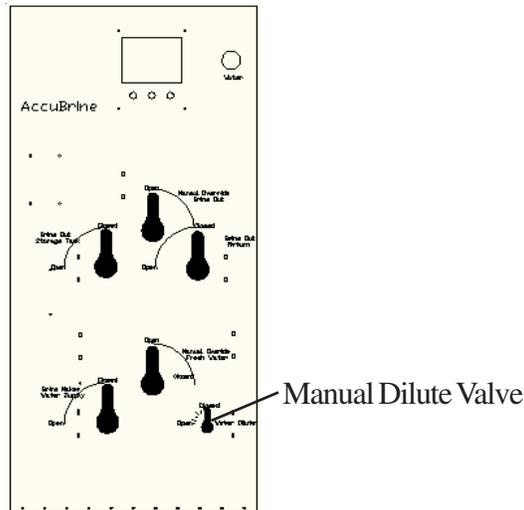
## Concentration: Over and Undershooting

This is witnessed by the concentration of the brine being over tolerance and then under tolerance.

1. This is caused by the machine not being able to dial in a desired concentration. As the dilute valve adjusts, too much water is added in the dilution process then the valve adjusts again and not enough water is added.
2. Brine tolerance to tight: Set concentration + or – to 300 or above. Adjust the dilute on time downward. Ideally it should take 12 or more actuations of the dilute valve to open fully. To test, set the desired concentration of brine to 19.6% and put the machine in Simulate Mode and make a batch. Watch the dilute valve and count the number of valve bumps it takes to fully open from the closed position.
3. Excess water pressure – High water pressure may allow an excess amount of water to pass through the dilute valve. Installing a pressure regulator on the water supply side limiting the pressure to the 40-50 PSI in a static position will greatly enhance the dilution performance.

## Walchem Electroless Conductivity Analyzer Calibration - Single Point

This single point calibration procedure should be used when the operating temperature of the brine, salt and water are 10 or more degrees above or below normal expected temperatures in the brine making season (sensor is calibrated at the factory at 38 degrees F.). This procedure will be accomplished with the brinemaker recirculating brine to and from the salt tank in the batch making process. The concentrated brine will be diluted manually with the manual dilute valve on the lower front right portion of the brinemaker control panel. Make sure there is plenty of salt and water in the salt tank to fully concentrate the brine and prevent the fresh water to the top of the salt tank from coming on during this process.



On setup page 1, set the Target Brine Concentration to 26.2%. This will set the specified concentration on the concentration graph on the touch screen to the extreme right of the graph.

Set the Target Concentration (+ or -) % to 100. This will narrow the green band on the concentration graph on the touch screen.

Go to the Batch page and enter 500 gallons.

Press Auto Start. Allow the brine to recirculate to the salt tank for 15 minutes to become fully concentrated and equalize the temperature of the liquid and conductivity sensor.

Open the manual dilute valve about 1/3rd of full travel.

Take two or three brine samples at the salt tank return hose quick coupler. Open one wing of the coupler to allow a small stream of brine to leak out. Collect about one cup of brine and test with a hand held salt brine concentration tester.

If the collected brine concentration is higher than 23.3%, open the dilute valve some more. Open valve in small increments to prevent under shooting the 23.3% concentration.

If the collected brine concentration is under the 23.3%, close the dilute valve a small amount.

Continue sampling, testing, and adjusting the dilute valve until the concentration is 23.3% + or - 0.1% .

## Walchem Electroless Conductivity Analyzer Calibration - Single point cont.

When the brine sample is at the 23.3% concentration, perform the calibration procedure on the Walchem Conductivity Analyzer located on the back right side of the control panel. Open the clear plastic cover.

1. Press the **exit** button until “conductivity A” is displayed.
2. Press the **enter** button until calibrate is displayed.
3. Press the **enter** button.
4. Press the **enter** button.
5. Use the **left and right arrow** buttons, to move the flashing cursor to the correct positions and the **up and down arrows** to enter the value of sample concentration taken earlier. For Ex. **23.3**
6. Press the **enter** button twice.
7. Press the **exit button**. The Single-point Calibration process is complete.
8. The concentration on the analyzer and touch screen should now read very close to 23.3%.
9. Go to the setup page 1 and return the Target Brine Concentration setting back to 23.3%
10. Return the Target Concentration (+ or -) % back to 350 or 0.6%.
11. Let the 500 gallon batch complete and monitor the machines performance.

If this procedure does not improve the accuracy of the brine concentration, refer to the 3 point calibration section on the next page and perform that process.

## Walchem 410 series Electroless Conductivity Analyzer Calibration - 3 point

Purpose: This 3 point calibration procedure should be performed at machine installation, and when the operating temperature of the brine, salt and water are 10 or more degrees above or below normal expected temperatures in the brine making season (sensor is temperature calibrated at the factory at 38 degrees F). This procedure will be accomplished with the brinemaker recirculating brine to and from the salt tank in the BATCH making process. The concentrated brine will be diluted MANUALLY with the manual dilute valve on the lower front right portion of the brinemaker control panel to CREATE brine liquids of a specific concentration. Make sure there is plenty of salt and water in the salt tank to fully concentrate the brine during this process.

### **Creating Specific Concentration Liquids Procedure:**

- 1). On the Accubrine touch screen, with password 4096 activated, go to setup page 1, set the Target Brine Concentration to 26.2%. This will set the specified concentration range on the concentration graph to the extreme right of the graph.
- 2). Set the Target Concentration (+ or -) % to 100. This will narrow the green band on the concentration graph on the touch screen.
- 3). Close the 2" fresh water valve on the salt tank to prevent water from entering the salt tank during the calibration process.
- 4). Go to the Batch page and enter 500 gallons.
- 5). Press Auto Start. Allow the brine to recirculate back to the salt tank for 15 minutes to become fully concentrated and equalize the conductivity sensor to the temperature of the liquid.
- 6). Open the manual dilute valve about 1/3rd of full travel. Note: This process allows us to CREATE the 3 calibrating solutions.
- 7). Take two or three brine samples at the salt tank **return** hose quick coupler by opening ONE wing of the coupler to allow a small stream of brine to leak out. Collect about one cup of brine and test with a hand held salt brine concentration tester.

If the collected brine concentration is higher than 22.0%, **open** the dilute valve a small amount. Note: Open the dilute valve in small increments to prevent under shooting the 22.0% concentration.

If the collected brine concentration is under the 22.0%, **close** the dilute valve a small amount.

Continue sampling, testing, and adjusting the dilute valve until the concentration is 22.0% + or - 0.1%.

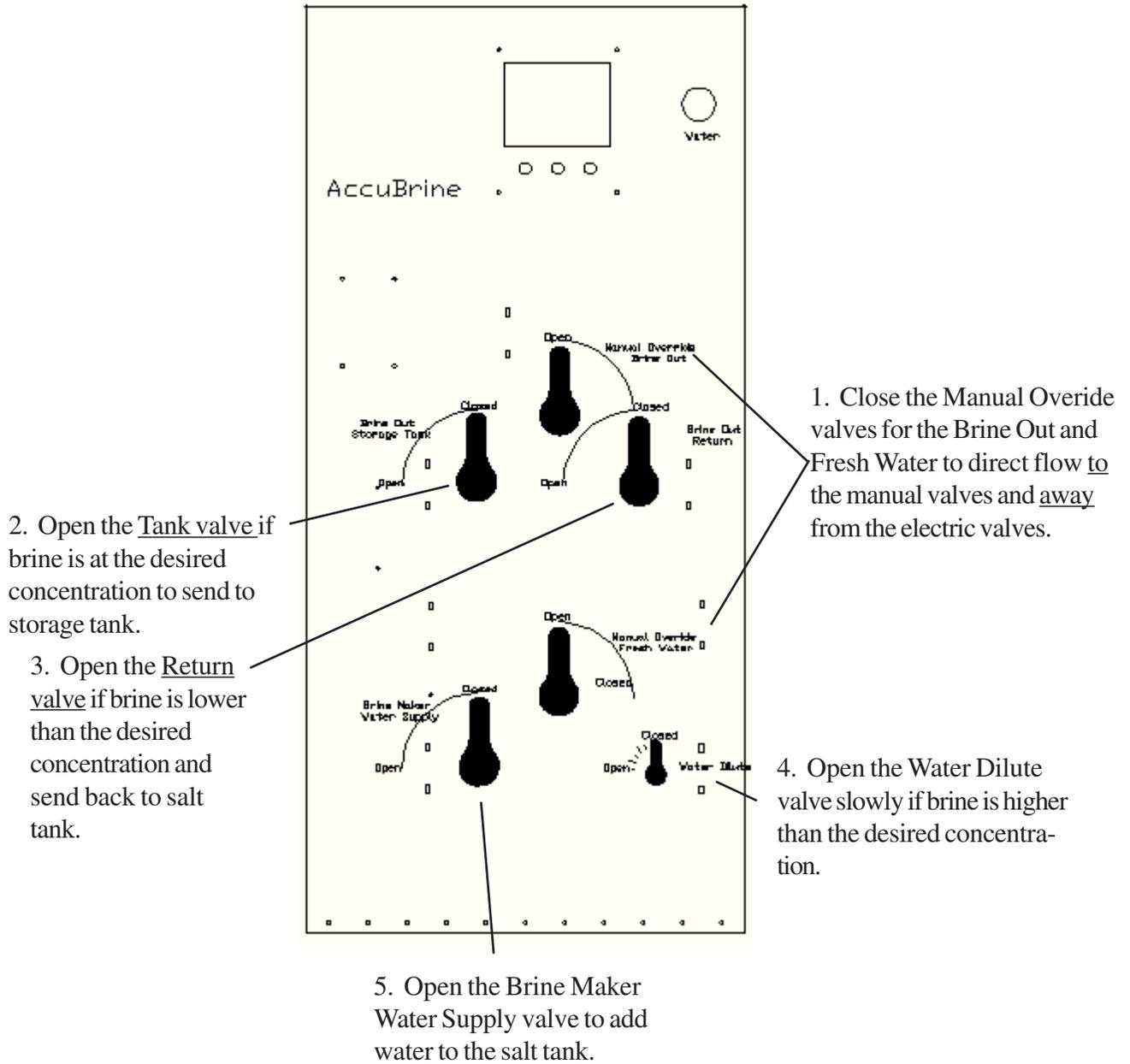
## Walchem Electroless Conductivity Analyzer Calibration - 3 point cont.

**Walchem 410 Sensor Calibration:** When the brine sample is at the 22.0% concentration, enter the multi point calibration screen on the Walchem Conductivity Analyzer located on the back right side of the control panel.

- A. Press the **exit** button until the % concentration and SENSOR is displayed on the analyzer screen.
- B. Press the **enter** button and then the **next** button until CALIBRATE is displayed.
- C. Press the **next** button until MULTI POINT is displayed.
- D. Press the **enter** button.
- E. Use the **UP** arrow button to change the 2 to a 3 and press **enter**. If the analyzer asks you to RINSE SENSOR, press **next**. The analyzer will then ask you to put the sensor into the first solution. With the machine running and the dilute valve metering in fresh water, we **created** the FIRST solution of 22.0%
- F. Use the **left** and **right arrow** buttons, to move the flashing cursor to the correct positions and the **up and down arrows** to enter the value of sample concentration taken earlier. For Ex. **22.0**
- G. Press the **enter** button to enter the first actual sample concentration into the analyzer.
- H. Press the **enter button** when the conductivity reading (in MS – Milli-Siemens) stabilizes. Approximately 10 seconds. The analyzer display will now ask you to place the sensor into the second solution.
- I. Return to step 7 and repeat above procedure to **CREATE** and **ENTER** the next solution of 23.3% and then 24.5%.
- J. When all three solutions have been entered into the analyzer, CAL SUCCESSFUL will be displayed. If an error message occurs, repeat the multi-point calibration process.
- K. Press the exit button until the concentration and temperature are displayed. The concentration on the analyzer and touch screen should now read very close to 23.3%.
  
- L. Go to the setup page 1 and return the Target Brine Concentration setting back to 23.3%
- M. Return the Target Concentration (+ or -) % setting back to 350 or 0.6%.
- N. Let the 500 gallon batch complete and monitor the machines performance.

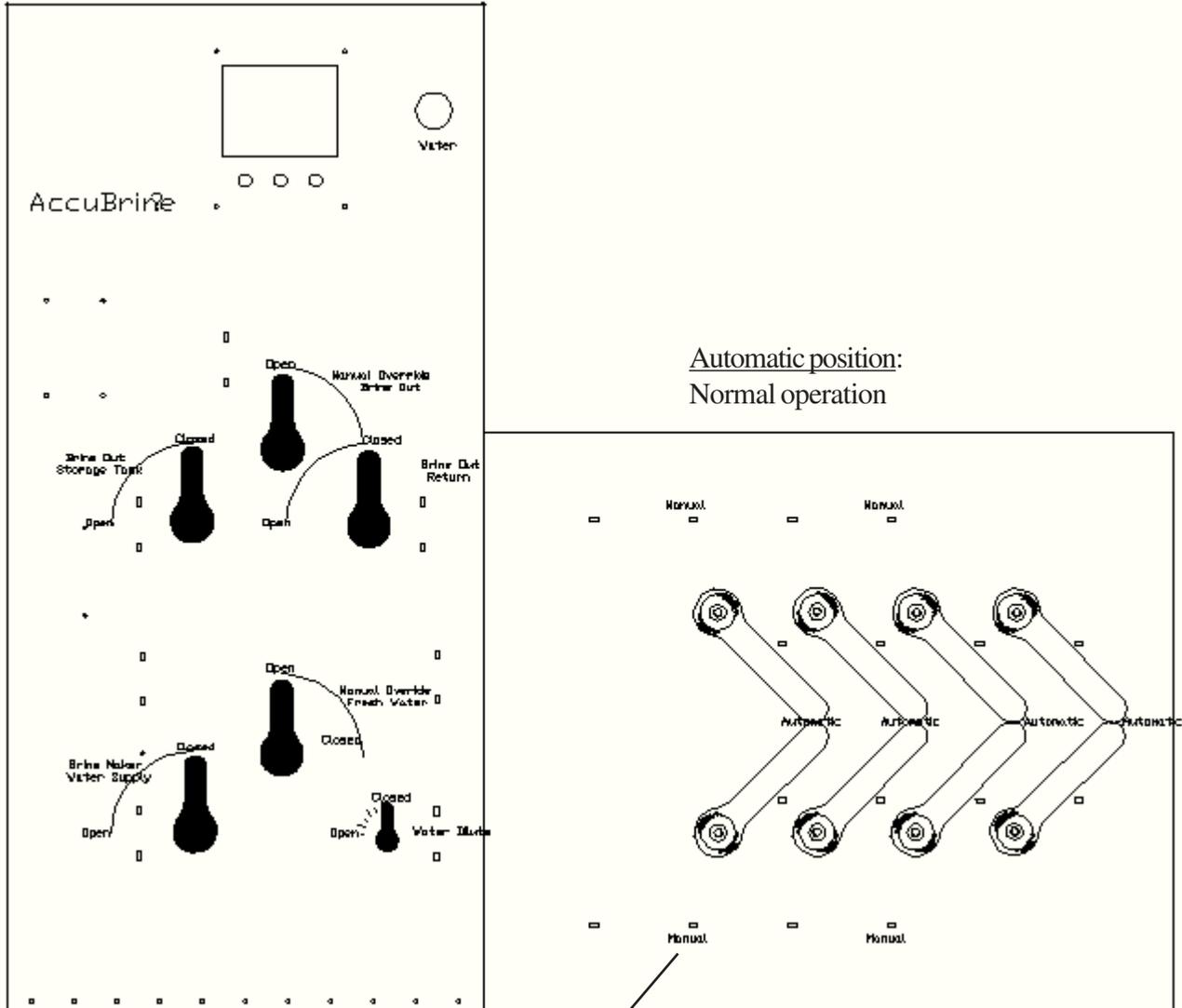
## Main Control Panel Automatic Valve Position .

The valves are shown in the normal auto position. The manual positions can be used in the event of an actuated valve failure. To make brine manually, follow the steps below



## Main Control Panel and Sub Panel - Additives and Remote Fill Valve Positions

All valves are shown in the automatic position. The manual positions can be used in the event of an actuated valve failure. To make brine manually, see previous page for valve positions on main panel. The valve positions for the modular panel, regardless of function are illustrated below.



Automatic position:  
Normal operation

Manual position: Opens valve to direct flow to the same location as the electric valve. Turn handle 180 degrees.

Half Way between the Manual and Automatic position: This position blocks flow to the electric valve. Note: The electric valves fail in the open position.

## Accubrine™ Automated Brine maker - Salt Tank Cleanout Procedure

Periodic cleaning and removal of sediment and debris from the salt tank is required to keep the brine maker operating efficiently. Before cleaning the salt tank, it's best to have the salt level as low as possible to prevent the salt from becoming a hard layer, and prevent corrosion from forming on the screen during storage. With three inches or less of salt remaining on the screen, the screen can be removed from the salt tank with the supplied nylon straps. Use care when removing as damage may occur to screen or salt tank. Clean off salt screen and return to salt tank after tank cleanout.

### A. Lowering the brine level in Salt Tank

1. Input password 4096
2. Go to Set up page 1
3. Take note of the "pump-off setting". Set pump-off to a value of "50".
4. Close the 2" water supply valve on the end of the salt tank to prevent more water from being added.
5. Run a small batch of 500 gallons of brine. The machine will send brine to the storage tank. (Increase "Target Concentration + or -" setting to allow brine to be sent to storage tank.) Very Important!!! The sound of the pump will change when the liquid level gets below the suction lines to the pump. Have someone shut off system as soon as pump change is heard prevent damage to the seals of the pump.
6. This will lower the liquid level to the suction line on the salt tank. Return to setup page one and set the "pump-off setting" and "Target Concentration + or -" to original settings.

### B. Cleaning the Salt Tank & Sump

1. Open the "Water Manual Override" valve on the control panel to send water to the salt tank. Clean sides of the salt tank with a brush and water to remove deposits.
2. Close the 2" water valve on salt tank, located on end of salt tank.
2. Remove 4" drain cover on front of the salt tank. Caution: A large volume of liquid will flow through the fitting when cap is removed. If valve is installed, use loader bucket to remove liquid if desired.
3. Open the (2) 1" Valves located next to the 2" water valve on salt tank valve bank.
4. Open the (2) 1" Valves located on the lower portion on the front side of salt tank for the spray bars to move sediment into sump.
5. Open the (3) 1/2" valves located on the lower back side of the salt tank for the sump nozzles to move sediment out of sump through the 4" cleanout.
6. When water flushing from the sump is clean, the sump cleaning process is complete.
7. Close the "Water Manual Override" valve on the control panel.
8. Open the 2" Water valve on Salt Tank.
9. Wait 1 minute and close the lower (2) 1" valves on front of salt tank and (3) 1/2" valves on rear of salt tank. This allows the cleanout lines to drain completely.
10. Close the (2) 1" valves located next to the 2" water valve on end of salt tank.
11. Go to Setup page 1 on the HMI display. Reset the "Sump Clean Out" button.
12. Reset password to 10 to prevent tampering.

**Important: When the cleaning process is finished, allow the salt tank fresh water and cleanout lines to drain completely. Failure to do so could cause freeze damage.**

The Accubrine™ Automated Brinemaker salt tank is now ready to start the brine making process. Make sure all valves are in correct operating position if starting a brine batch. Prime the pump with manual dilute valve before starting pump. This will prevent damage from running pump dry.

## *Accubrine™ Automated Brine maker Off Season Storage Procedure*

Before cleaning the Salt Tank, it's best to have the salt level as low as possible to prevent the salt from becoming a hard layer, and prevent corrosion from forming on the screen during storage. With three inches or less of salt remaining on the screen, the screen can be removed from the salt tank with the supplied nylon straps. Use care when removing as damage may occur to screen or salt tank. Clean off salt screen and return to salt tank after tank cleanout.

### A. Lowering the brine level in Salt Tank

1. Input password 4096
2. Go to Set up page 1
3. Take note of the "pump-off setting". Set pump-off to a value of "50".
4. Close the 2" water supply valve on the end of the salt tank to prevent more water from being added.
5. Run a small batch of 500 gallons of brine. The machine will send brine to the storage tank, (Increase "Target Concentration + or -" setting to allow brine to be sent to storage tank.) Very Important!!! The sound of the pump will change when the liquid level gets below the suction lines to the pump. Have someone shut off system as soon as pump change is heard prevent damage to the seals of the pump.
6. This will lower the liquid level to the suction line on the salt tank. Return to setup page one and set the "pump-off setting" and "Target Concentration + or -" to original settings.

### B. Cleaning the Salt Tank & Sump

1. Open the "Water Manual Override" valve on the control panel to send water to the salt tank. Clean sides of the salt tank with a brush and water to remove deposits.
2. Close the 2" water valve on salt tank, located on end of salt tank.
2. Remove 4" drain cover on front of the salt tank. Caution: a large volume of liquid will flow through the fitting when cap is removed. If valve is installed, use loader bucket to remove liquid.
3. Open the (2) 1" Valves located next to the 2" water valve on salt tank valve bank.
4. Open the (2) 1" Valves located on the lower portion on the front side of salt tank for the spray bars to move sediment into sump.
5. Open the (3) 1/2" valves located on the lower back side of the salt tank for the sump nozzles to move sediment out of sump through the 4" cleanout.
6. When water flushing from the sump is clean, the sump cleaning process is complete.

### C. Accubrine™ Control Panel and Pump Cleanout Procedure Using Simulate Mode

1. Close 4" cleanout valve or reinstall cap on salt tank.
2. Verify that all 2" valves (three) on salt tank are open.

*Accubrine™ Automated Brine maker Off Season Storage Procedure Cont.*

1. Open the “Brine Maker Water Supply” valve on lower left front of control panel. This will put fresh water back into salt tank. Fill salt tank until water level is about 2 inches above screen.
2. Close the “Brine Maker Water Supply” valve.
3. Close the valve on the brine storage tank and disconnect hose from tank. This will prevent fresh water from entering the storage tank. Put end of hose on ground where water can be discharged.
4. Open the manual “Water Dilute” valve on the bottom right portion of the control panel (this will make sure the pump is primed for the next step).
5. Move the “To Salt Tank” valve handle on the subpanel from “Automatic” to “Manual”. This will open the path to recirculate the water back to salt tank.
6. On the control panel, turn the Hand-Off-Auto switch to the Hand position. This will start the pump. Run for 20 seconds to prime the pump.
7. Turn the Hand-Off-Auto switch to the center (off) position.
8. Turn off the manual “Water Dilute” valve on the bottom right portion of the control panel.
9. Return the “To Salt Tank” valve handle on the subpanel from “Manual” to “Automatic”.
10. Enter password 4096 and then return to the main page.
11. Press the “Mode” button to go to the mode page.
12. Select “Simulate Mode”
13. Return to the main page.
14. Press the “Batch” button and enter a batch of 200 gallons.
15. Press “Auto Start”. This will simulate a batch of brine being made.
16. When the “Simulated” concentration enters the “Green” range on the touch screen, the automatic valves to the Brine Storage Tank will open and flush the lines and valves with fresh water.
17. When the concentration enters the “Green” range, open the manual Remote Truck Fill valve and turn the Remote Truck Fill switch to “On”. This will flush the Truck Fill automatic valves on the subpanel and lines.
18. Return to the Batch page and press “Stop”.
19. Go to the main page and Press the “Mode” button to go to the mode page.
20. Select “Normal Mode”
21. Return to the main page.
22. Manually drain Salt Tank and all storage tank lines.
23. Reconnect hose to Brine Storage Tank.
24. Close “Water Manual Override” valve on control panel.
25. Open the 2" Water valve on Salt Tank.
26. Wait 1 minute and close the lower (2) 1" valves on front of salt tank and (3) ½" valves on rear of salt tank. This allows the lines to drain completely.
27. Close the (2) 1" valves located next to the 2" water valve on end of salt tank.
28. Go to Setup page 1 on the HMI display. Reset the “Sump Clean Out” button.
29. Reset password to 10 to prevent tampering.

*Accubrine™ Automated Brine maker Off Season Storage Procedure Cont.*

**Important: When the cleaning process is finished, allow the salt tank fresh water and cleanout lines to drain completely. Failure to do so could cause freeze damage.**

D. Accubrine™ Control Panel leaks and stainless steel cleaning

1. Look for any leaks on the control panel and subpanel. Replace any pinched or damaged gaskets. Tighten any loose hose or fitting clamps snugly.
2. Use a high quality stainless steel cleaner on all stainless steel parts to clean and prevent corrosion. WD-40 also works very well.
3. It is not necessary to turn the power off to the machine. Leaving the power on to the machine will help prevent moisture from entering the control cabinet. The touch screen will go into screen saver mode.

The Accubrine™ Automated Brinemaker is now ready to store for the season.

## Complete Parts List

The HMI Callout Numbers listed below are the same as the circled number in the Parts pages available on the HMI touch screen. The BM # is the Cargill inventory/order number. To order parts, call the Accubrine call center at 1-866-900-7258

BM #	HMI #	DESCRIPTION	MFG_NAME	MFG_PART_ID
BM-631		CONNECTOR, TRANSDUCER XMLG	Allen Bradly	871A-TR4-D1
BM-590		SLING FOR GRATE REMOVAL/ASSEMBLY	AMER. WIRE & ROPE	27-40763
BM-201	#60	PUMP, W/SI-C SEAL	AMT PUMPS CO.	315C-976-98
BM-202		PUMP, 200GPM 5 HP. 3 phase	AMT PUMPS CO.	4240-98
BM-203		PUMP, 200GPM, NO MOTOR	AMT PUMPS CO.	3152-K8
BM-204		PUMP, 200GPM, HIGH FLOW WITH 7.5HP MOTOR	AMT PUMPS CO.	315G-98
BM-585		PUMP, 4250-98SP, 300GPM, Standard 3 Phase 10 HP MOTOR	AMT PUMPS CO.	4250-98SPL
BM-205		PUMP, 4250-98SP, 300GPM, HIGH FLOW WITH 15HP MOTOR	AMT PUMPS CO.	4250-98SPL
BM-206		PUMP, 3HP, 208-230/460 3phase	AMT PUMPS CO.	315D-999-98
BM-207		VITON SEAL FOR 4900 SERIES (SHAFT SEAL )	AMT PUMPS CO.	1640-161-97
BM-208		VITON SEAL FOR 4900 SERIES (CASING SEAL)	AMT PUMPS CO.	2119-013-00
BM-209		SILICON CARBIDE/VITON KIT	AMT PUMPS CO.	3156-300-92
BM-593		SEAL KIT , VITON & SIL. CARB. for the 4250 series	AMT PUMPS CO.	
BM-594		SHAFT SEAL for the 4250 series	AMT PUMPS CO.	
BM-595		casing cover (stainless steel) for the 4250 series	AMT PUMPS CO.	
BM-596		15hp motor (only) for the 4250 series	AMT PUMPS CO.	
BM-597		7.5hp motor (only) for the 315G series	AMT PUMPS CO.	
BM-639		SHIM KIT	AMT PUMPS CO.	1806-044-90
BM-640		O-RING	AMT PUMPS CO.	2105-037-00
BM-210		HOSE, 1/2 ID X 20" LG-EPDM SPRAY AG200	Apache Hose & Belt	10040507
BM-211		HOSE, 2" ID X 300 FT MED DUTY WATER	Apache Hose & Belt	13021503
BM-212		HOSE, 1 1/4" DIA X 250 FT EPDM SPRAY	Apache Hose & Belt	10040507
BM-213		HOSE, 2" ID ENFORCE FERT SOL HS W/HELIX	Apache Hose & Belt	12012964
BM-214		HOSE, 2" ID 150 PSI WATER DISCHARGE	Apache Hose & Belt	15611
BM-584		HOSE, 3/4" I.D. x 1.140" O.D. Yellow,PVC 600# Spray hose,	Apache Hose & Belt	15010009
BM-636		3" I.D. Enforcer/Reinforced Fertilizer Solution Hose	Apache	
BM-637		4" I.D. Enforcer/Reinforced Fertilizer Solution Hose	Apache	
BM-611		Locknut, Conduit, 1" Steel	APPLETON	BL100
BM-215		VALVE, SOLENOID (24VDC)	ASCO	8210G003 24VDC
BM-216		NOZZLE TIP, 1/4 MPT GREEN PP	BEX	F6560
BM-217		FUSE (.125 AMP/TYPE FU520/5x20 GMA)	BUSSMANN	GMA-125
BM-218		FUSE (15 AMP/TYPE FU520/5x20 GMA)	BUSSMANN	GMA-15
BM-219		FUSE (10 AMP/TYPE FU520/5x20 GMA)	BUSSMANN	GMA-10
BM-220		FUSE (6.3 AMP/TYPE FU520/5x20 GDC)	BUSSMANN	GDC-6.3
BM-221		FUSE (5.0 AMP/TYPE FU520/5x20 GDC)	BUSSMANN	GDC-5.0
BM-222		FUSE (3.15 AMP/TYPE FU520/5x20 GDC)	BUSSMANN	GDC-3.15A
BM-223		FUSE (2.0 AMP/TYPE FU520/5x20 GDC)	BUSSMANN	GDC-2.0
BM-224		FUSE (1.0 AMP/TYPE FU520/5x20 GDC)	BUSSMANN	GDC-1.0
BM-225		FUSE (6.3 AMP/TYPE FU520/5x20 GMC)	BUSSMANN	GMC-6.3
BM-226		FUSE (5 AMP/TYPE FU520/5x20 GMC)	BUSSMANN	GMC-5.0
BM-227		FUSE (3 AMP/TYPE FU520/5x20 GMC)	BUSSMANN	GMC-3.0
BM-228		FUSE (2 AMP/TYPE FU520/5x20 GMC)	BUSSMANN	GMC-2.0
BM-229		FUSE (1 AMP/TYPE FU520/5x20 GMC)	BUSSMANN	GMC-1.0
BM-230		TWO-GANG BOX ( TYPE FSC )	CANTEX	5133713
BM-231		TWO-GANG COVER ( TYPE FSC )	CANTEX	5133410
BM-615		SanDisk Cruzer Micro Skin - USB flash drive - 2 GB	CDW	1500341
BM-232		LOCKING CONNECTOR, 30AMP 3 POLE 4 WIRE	Cooper Wiring Devices	L1430CY
BM-233		LOCKING PLUG, 30AMP 3 POLE 4 WIRE	Cooper Wiring Devices	L1430PY
BM-610		LOCKING PLUG, 30AMP 3 POLE 5 WIRE	Cooper Wiring Devices	L2130PY
BM-234		ROLL TARP	COVER OF INDIANA	ROLL TARP
BM-235	#97	LEVEL SWITCH, SIDE MOUNT	GEMS	160450
BM-236	#1.1	ENCLOSURE (24"x20"x8")	HAMMOND MFG	PJ242008RL
BM-237		ENCLOSURE, WINDOW (24"x20"x8")	HAMMOND MFG	PJ242008RLW
BM-238		ENCLOSURE (10"x8"x6")	HAMMOND MFG	PJ1086
BM-239		ENCLOSURE (12"x10"x6")	HAMMOND MFG	PJ12106
BM-240		ENCLOSURE (12"x10"x6")	HAMMOND MFG	PJ12106RL
BM-241		ENCLOSURE (18"x16"x8")	HAMMOND MFG	PJ18168RL
BM-242		ENCLOSURE (16"x14"x8")	HAMMOND MFG	PJ16148RL

BM #	HMI #	DESCRIPTION	MFG_NAME	MFG_PART_ID
BM-243		ENCLOSURE (10"x8"x6")	HAMMOND MFG	PJ1086RL
BM-244		GAUGE, WATER PRESSURE (0-160PSI)	HYPRO	WGG160C
BM-245		STRAINER, HYPRO, 1/2 FPT	HYPRO	10570
BM-246		MALE PIPE THREAD, 1/2" x 1/2"	HYPRO	A12B
BM-247		MALE PIPE THREAD, 3/4" x 1/2"	HYPRO	A3412B
BM-248	#78	HYPRO PUMP SS 1 PHASE, 230 V, ODP MOTOR	HYPRO	COMSV77
BM-249		1/4" FPT X 1/4FPT ELL	HYPRO	LL14B
BM-250		HOSE CLAMP, 1/2" ID HOSE , SS WORM DRIVE	HYPRO	6J
BM-251	#77	HYPRO PUMP , PUMP HEAD ONLY	HYPRO	COMSV7X
BM-252	#76	PEDESTAL PUMP ONLY	HYPRO	COPSV7
BM-253	#79	MOTOR, (for pedistal pump) 3 HP 230 60HZ 1 PHASE	Leeson	131637
BM-591		MOTOR, 3 HP 230V 60HZ 3 PHASE	Leeson	G130099.00
BM-592		MOTOR, WASHGUARD 3 HP 230V 60HZ 3 PHASE	Leeson	G120911.00
BM-254	#83	HUB, 5/8" BORE X 2-7/64 OD WITH KEYWAY	LOVEJOY	685144-37242
BM-255	#84	HUB, 1-1/8" BORE X 2-7/64 OD WITH KEYWAY	LOVEJOY	685144-11093
BM-256	#85	SPIDER SHAFT COULPING HUB, 2-7/64	LOVEJOY	685144-11070
BM-613		Hub, 7/8" Bore X 2-7/64 OD w/ Keyway (3 Phase Leeson Motor)	LOVEJOY	
BM-587		Seal Kit - Hypro	HYPRO	2120-0039S
BM-257		BAND HEATER, 3 1/2" X 3 3/4" 1900 WATTS	MC MASTER CARR	8160T23
BM-258	#24	ROLL COVER, BLK PE 1 5/16 X 1 9/16 OD	MC MASTER CARR	5872K51
BM-259	#36	PRESSURE TRANSDUCER (NEFF)	NEFF ENGINEERING	615-2-1-1-2-1
BM-260		FIBERGLASS END CAPS (TWO PER SET)	Premier Fiberglass	
BM-261		2.75 ID RUBBER GROMMET - GROOVE DIAMETER 3"	Rubber Prod. Distrib.	G3327
BM-262		ONE-TOUCH FITTING FEMALE CONNECTOR 1/4	SMC Corp. of America	KQ2FO7-35
BM-263		ONE-TOUCH FITTING MALE ELBOW 1/4" x 90*	SMC Corp. of America	KQ2LO7-35S
BM-264		ONE-TOUCH FITTING FEMALE CONNECTOR 1/4	SMC Corp. of America	KQ2SO7-35
BM-265		CONDUCTIVITY TESTER	WALCHEM	WEC410
BM-614		CONDUCTIVITY TESTER (New - 10/10/2009)	WALCHEM	WEC410-54PN-S
BM-641		WEC 410 Sensor	Walchem	190988-05
BM-266		PIPE SADDLE (WELD MOUNT) PP W/SS PLTS 1"	ZSI Inc.	S-5021-S-SS
BM-267		PIPE SADDLE PP W/SS PLTS 1 1/4"	ZSI Inc.	S-5027-S-SS
BM-268	#40	CROSS, 1" PVC FEMALE	SPEARS MFG	820-010
BM-598		SANDISK 512MB CF CARD ( SDCFJ-512-388 )	CDW	869078
BM-580		Plug, 3 phase, 5 prong	HUBBELL	HBL2811
BM-599		Dilute valve assembly - EH3, 24VDC	KZ CO Inc.	ACC1105
BM-600		Water valve assembly - EH2, 24VDC	KZ CO Inc.	ACC1075
BM-601		Tank valve assembly	KZ CO Inc.	ACC1150
BM-602		Dilute valve only - valve sub assbly, QX4 2-way, 1"HP	KZ CO Inc.	C2F-008
BM-603		Dilute valve actuator - EH3,3.5 SEC@24VDC	KZ CO Inc.	ACC1015
BM-604		Water valve only- valve sub assbly, EH2, 2" FP, 2 Way, 2" FP FLG	KZ CO Inc.	C2122
BM-605		Water valve actuator - EH2, Solid State, 4 Sec @ 24VDC	KZ CO Inc.	ACC1030
BM-606		Tank valve only - valve sub assbly, EH2, 2" FP, 3 Way, 2" FP FLG	KZ CO Inc.	C7122
BM-607		Tank valve actuator - EH2, Solid State, 4 Sec @ 24VDC, 90 DEG.	KZ CO Inc.	ACC1060
BM-608		Dilute valve fitting assbly, 3/4" Hosebarb, 90 DEG. Poly	KZ CO Inc.	QHP-075L
BM-617		RFID Tags - Key Fob style	RF Logics	IDK50
BM-627		RFID Card Reader	RF Logics	RFK101W
BM-642		RFID READER WITH RS232 OUTPUT	RFLOGICS	# RF10 (RS232 OU
BM-643		DISPLAY PD6000-7R0	PRECISION DIGITAL	# PD6000-7R0
BM-629		24VDC to 12 VDC Power Supply	Rhino	PSP12-024S
BM-632		CABLE (MINI DIN)	L-COM	DK238MF-3
BM-633		USB CONNECTOR, PANEL MOUNT,05M LENGHT	L-COM	WPUSBAX-05M
BM-634		USB CONNECTOR, CAP	L-COM	WPUSB-CVR
BM-635		3 CONDUCTOR SHILD CABLE (75 FT )	BELDEN	
BM-269	#51	OUTLET, PERF SPRAY 3/16"	ATE	
BM-270	#92 incl.	FLUSH TUBE, 1" PVC PIPE (FAB)	ATE	
BM-271	#55	PLUG, 3" (MODIFIED COMM'L) OS TAP	ATE	
BM-272	#58	PLUG, 3" (MODIFIED COMM'L)INS TAP	ATE	
BM-561		FLOW REDUCER INSERT ASSY (Dilute valve)	ATE	
BM-562	#88	PUMP RISER	ATE	

BM #	HMI #	DESCRIPTION	MFG_NAME	MFG_PART_ID
BM-563		HEATER UNIT ASSEMBLY	ATE	
BM-571	#87	PEDISTAL PUMP REBUILD KIT	ATE	
BM-100		1 1/4 PVC Flange (Modified) for Press. Tran.(PVC) and tube	ATE	851-012
BM-99		1 1/4 PVC Adaptor for Press. Tran.(PVC) and tube	ATE	
BM-93		PVC X M220 Adaptor	ATE	
BM-583		PVC X M330 Adaptor	ATE	
BM-578		Valve Handle Labels (does not include milling of handles)	ATE	
BM-579		Hose Labels - set	ATE	
BM-582		Modified M220CROSS	ATE	
BM-586		BM-253.Motor, 3 Hp, 1 Ph (Leeson #131637),& BM-252 Pedistal Pump (Hypro#COPSV7)		ATE
BM-609		KZ Dilute valve insert	ATE	
BM-612		3 Phase Wash Down Motor, Mounts, Coupler and Guard	ATE	
BM-624		Enclosure Strut	ATE	
BM-644		ALUMINUM RETROFIT PLATE (PUMP)	ATE	
BM-273	# 1	TANK VALVE ASSEMBLY	BANJO	MEV220BL243D
BM-274	#2	WATER VALVE ASSEMBLY	BANJO	MEV220CF243D
BM-275	#3	DILUTE VALVE ASSEMBLY	BANJO	MEV100CF243D
BM-276	#62	REMOTE FILL VALVE ASSEMBLY	BANJO	MEV220SL243D
BM-277		COUPLING, 1" X 90°	BANJO	EL100-90
BM-278	#54	COUPLING, 3 IN	BANJO	M300CPG
BM-279	#75	CROSS, 3" FEMALE	BANJO	M300CR
BM-280	#53	REDUCER, 3"X 2" FEMALE	BANJO	M300220BRB90
BM-281	#68	CLAMP, 3"	BANJO	FC300
BM-282		GASKET, 3" (EPDM)	BANJO	300G
BM-283		GASKET,2" (EPDM)	BANJO	200G
BM-284	#56	ADAPTOR, 3" X 2"	BANJO	M300220CPG
BM-285	#10	HOSE FITTING, 2"	BANJO	M220BRB
BM-286	#9	HOSE FITTING, 2" (MODIFIED COMM'L)	BANJO	M220BRB
BM-287	#6	CROSS, 2"	BANJO	M220CR
BM-288	#12	REDUCER COUPLING, 2" X 1"	BANJO	M220100CPG
BM-289	#14	HOSE FITTING, 1"	BANJO	M100125BRB
BM-290	#15	TEE, 1"	BANJO	M100TEE
BM-291	#7	TEE, 2"	BANJO	M220TEE
BM-292	#61	MANUAL VALVE, 2",3 WAY	BANJO	MV220BL
BM-293		HANDLE, EXTENDERS	BANJO	V25153138BL
BM-294	#13	HOSE FITTING, 1 1/4" X 1" X 90°	BANJO	M100125BRB90
BM-295	#66	CLAMP, 2"	BANJO	FC220
BM-296	#67	CLAMP, 1" BANJO	BANJO	FC100
BM-297		GASKET, 1" BANJO	BANJO	M100G
BM-298	#16	VALVE W/QUICK COUPLER	BANJO	MVSF220FP
BM-299		FLANGE, TANK	BANJO	MBF223
BM-300		FLANGE, TANK	BANJO	MBF200
BM-301	#19	NOZZLE, RETURN SPRAY (MODIFIED COMM'L.)	BANJO	PLUG200
BM-302	#72	FLANGE, TANK	BANJO	MBF220
BM-303	#69	CLAMP, T-BOLT HOSE	BANJO	TC218
BM-304	#48	ADAPTOR, THREADED 2" MPT	BANJO	M220MPT
BM-305	#47	HOSE FITTING, 2" MPT x HOSE FITTING	BANJO	HB200
BM-306		VALVE ONLY, 2" FP MANIFOLD	BANJO	MEV220XR1
BM-307		1" MANIFOLD FLANGE ENDPLATE	BANJO	VE10278A
BM-308	#45	ADAPTOR, MALE CAMLOCK	BANJO	M220A
BM-309	#65	COUPLING, 2" X 45°	BANJO	M220CPG45
BM-310	#44	TEE, REDUCING 2" X 1"	BANJO	M220100TEE
BM-311	#11	HOSE FITTING, 2" X 90°	BANJO	M220BRB90
BM-312		CLAMP, HOSE 1-1/4	BANJO	TC162
BM-313	#18	FLANGE HALF, 2"	BANJO	BF278
BM-314	#18A	GASKET, 2"	BANJO	BF220GE
BM-315	#25	HOSE FITTING,1" MPT X 1 1/4 HOSE X 90°	BANJO	HB100/125-90
BM-316	#37	HOSE FITTING,1/2" MPTX 1/2 HOSE X 90°	BANJO	HB050-90
BM-317	#38	UNION VALVE, 1/2"	BANJO	UV050FP

BM #	HMI #	DESCRIPTION	MFG_NAME	MFG_PART_ID
BM-318	#71	NIPPLE, CLOSE 1/2"	BANJO	<u>NIP050-SH</u>
BM-319	#30	HOSE FITTING, 1 1/4 MPT X 1 1/4 HOSEX90°	BANJO	<u>HB125-90</u>
BM-320	#32	NIPPLE, 1/2" X 3" LONG	BANJO	<u>NIP050-3</u>
BM-321	#33	STREET ELL, 1/2" X 90°	BANJO	<u>SL050-90</u>
BM-322	#34	FLANGE, TANK W/GASKET	BANJO	<u>TF050</u>
BM-323	#35	BUSHING, REDUCER 1/2" X 1/4"	BANJO	<u>RB050-025</u>
BM-324	#52	THREADED ADAPTOR, 2" SS	BANJO	<u>M220MPTSS</u>
BM-325		2" PLUG, BANJO	BANJO	<u>M220PLG</u>
BM-326		1" X 90° FLANGED BARB	BANJO	<u>M100BRB90</u>
BM-327		1" FLANGED BARB	BANJO	<u>M100BRB</u>
BM-328	#5	VALVE, 1" BALL	BANJO	<u>MV100CF</u>
BM-329	#39	HOSE BARB, 1/2 IPS X 1/2 ID HOSE	BANJO	<u>HB050</u>
BM-330		3" STN.STL. THREADED ADAPTER	BANJO	<u>M300MPTSS</u>
BM-331	#57	1 1/2" STN.STL. THREADED ADAPTER	BANJO	<u>M220150MPTSS</u>
BM-332		3" PLUG	BANJO	<u>M300PLG</u>
BM-333		4" STN. STL. THREADED FLANGE	BANJO	<u>BFC400SS</u>
BM-334	#63	4" CAMLOCK FITTING	BANJO	<u>400F</u>
BM-335	#64	4" CAMLOCK CAP	BANJO	<u>400CAP</u>
BM-336	#23	TANK FLANGE, 1"	BANJO	<u>MBF100</u>
BM-337	#20	TEE HANDLE 1" VALVE (AS PURCHASED)	BANJO	<u>V10353TB</u>
BM-338		2" X 6" FULL PORT FLANGE	BANJO	<u>M220CPG6</u>
BM-339	#21	TANK FLANGE, 1" LONGER BOLTS	BANJO	<u>MBF105</u>
BM-340	#70	CLAMP, T-BOLT HOSE ( 2.31"-2.62" )	BANJO	<u>TC231</u>
BM-341		2" CAMLOCK FEMALE/ 90 DEG BARB	BANJO	<u>200C90</u>
BM-342		2" CAMLOCK FEMALE / STRAIGHT BARB	BANJO	<u>200C</u>
BM-343	#4	VALVE, 2"	BANJO	<u>MV220CFSH</u>
BM-344		2" X FP FLANGE X 2" FPT INLET	BANJO	<u>MV220SL</u>
BM-345		2" CAP	BANJO	<u>200CAP</u>
BM-346	#74	2" FP X 2" FP MANIFOLD COUPLING	BANJO	<u>M220CPG90</u>
BM-347		1" FLANGE X 3/4" MALE THREAD	BANJO	<u>M100075MPT</u>
BM-348		2" X 2" FULL PORT FLANGE	BANJO	<u>M220CPG</u>
BM-349		3" FLANGE X 3" HOSE BARB	BANJO	<u>M300BRB</u>
BM-350		3" FLANGE X 3" THRD-EPDM	BANJO	<u>MBF300</u>
BM-351		3" FLANGED MANIFOLD VALVE	BANJO	<u>MV300CF</u>
BM-352		3" FLANGED X 3" HB-90 DEGREE	BANJO	<u>M300BRB90</u>
BM-353		3" STBY VLV QDC X FLNG LNG HNDL	BANJO	<u>MVSF300</u>
BM-354		3" MANIFOLD TEE	BANJO	<u>M300TEE</u>
BM-355		90 DEGREE MOUNTING BRACKET	BANJO	<u>V25271</u>
BM-356		1 SEC 24V HT 5 WIRE MOTOR ASSM (FAST)	BANJO	<u>EV41243C</u>
BM-357		90 DEG FMLE CPLP 2" FPT	BANJO	<u>200D90</u>
BM-358	#8	2" FULL PORT FLANGE X 2 " HOSE BARB 45 D	BANJO	<u>M220BRB45</u>
BM-359		FITTING, 1" POLY ELBOW 90 DEG	BANJO	<u>EL100-90</u>
BM-360		CAPLUG 1-1/8"	BANJO	<u>V20353C</u>
BM-361	#73	2" FP Y 45 MANIFOLD FITTING	BANJO	<u>M220Y45</u>
BM-362	#17	VALVE ACTUATOR ONLY (SLOW) 1/2" SHAFT	BANJO	<u>EV41243D</u>
BM-363		3" TANK FLANGE ASSY	BANJO	<u>TF300</u>
BM-364	#93	4" VALVE	BANJO	<u>V400</u>
BM-365	#94	NIPPLE, 4" X SHORT POLY	BANJO	<u>NIP400-SH</u>
BM-366	#95	HOSE FITTING, 4" MPT X 4" HOSE BARB	BANJO	<u>HB400</u>
BM-367	#96	HOSE FITTING, MALE ADATPER 4" HOSE BARB	BANJO	<u>400E</u>
BM-564		VALVE ONLY 1" (Dilute Valve)	BANJO	<u>MEV100XR1</u>
BM-567		2" FP BL VALVE ONLY (Tank Valve)	BANJO	<u>MEV220BLXR1</u>
BM-569		2" VALVE ONLY - SIDE LOAD	BANJO	<u>MEV220SLXR1</u>
BM-572	#89	3" X 3" STD PORT MANIFOLD 45 CPLNG	BANJO	<u>M300CPG45</u>
BM-573	#90	MNFLD HOSE BARB 3" X 2" BARB	BANJO	<u>M300220BRB</u>
BM-574	#91	1" Manifold X 3/4" Elbow Cplg	BANJO	<u>M100075BRB90</u>
BM-581		1" Manifold X 3/4" Hose Barb	BANJO	<u>M10075BRB</u>
BM-588		3" manifold X 3" Male pipe thread	BANJO	<u>M300MPT</u>
BM-589		3"T-Bolt Hose Clamp	BANJO	<u>TC331</u>

BM #	HMI #	DESCRIPTION	MFG_NAME	MFG_PART_ID
BM-368		SALT TANK GRATE ASSEMBLY	D&V Prec. Sht Mtl	
BM-369		SS MOUNTING BRACKET	D&V Prec. Sht Mtl	
BM-370		BRACKET, 1" VALVE	D&V Prec. Sht Mtl	
BM-371		BRACKET, 2" VALVE	D&V Prec. Sht Mtl	
BM-372		PAN, FLOOR (CONTROL PANEL)	D&V Prec. Sht Mtl	
BM-373		ACCUBRINE CONTROL PANEL FACE	D&V Prec. Sht Mtl	
BM-374		PANEL, MOUNTING RIGHT 14GAUGE	D&V Prec. Sht Mtl	
BM-375		PANEL, MOUNTING LEFT 14 GAUGE	D&V Prec. Sht Mtl	
BM-376		BRACKET, 2" VALVE SPECIAL 10GAUGE	D&V Prec. Sht Mtl	
BM-377		LARGE HMI INTERFACE PANEL	D&V Prec. Sht Mtl	
BM-378		REMOTE FILL CONTROL PANEL	D&V Prec. Sht Mtl	
BM-379		STRAP, (3) HOLE	D&V Prec. Sht Mtl	
BM-380		TARP STOP	D&V Prec. Sht Mtl	
BM-381		J HOOK	D&V Prec. Sht Mtl	
BM-382		WALL MANIFOLD PANEL, 5 HOLE UNIT	D&V Prec. Sht Mtl	
BM-383		UNIVERSAL BRACE-REMOTE PANEL	D&V Prec. Sht Mtl	
BM-384		UNIVERSAL BRACE-REMOTE PANEL (REV A)	D&V Prec. Sht Mtl	
BM-385		WALL MANIFOLD PANEL, 4 HOLE UNIT	D&V Prec. Sht Mtl	
BM-386		WALL MANIFOLD PANEL, 3 HOLE UNIT	D&V Prec. Sht Mtl	
BM-387		Y-MODULE PANEL	D&V Prec. Sht Mtl	
BM-388		UNIVERSAL BRACE Y-MODULE PANEL	D&V Prec. Sht Mtl	
BM-389		Y-6 MODULE PANEL	D&V Prec. Sht Mtl	
BM-390		PANEL, MOUNTING RIGHT SPECIAL 10GAUGE	D&V Prec. Sht Mtl	
BM-391		PANEL, MOUNTING LEFT SPECIAL 10GAUGE	D&V Prec. Sht Mtl	
BM-570	#86	SHROUD - COVERS PUMP/MOTOR COUPLING	D&V Prec. Sht Mtl	
BM-625		4 X 4 KZ Sub Panel	D&V Prec. Sht Mtl	
BM-626		6 X 6 KZ Sub panel	D&V Prec. Sht Mtl	
BM-618		1" Manual Banjo Valve Bracket	D&V Prec. Sht Mtl	
BM-619		2" Manual Banjo Valve Bracket	D&V Prec. Sht Mtl	
BM-620		Enclosure Mounting Bracket Left	D&V Prec. Sht Mtl	
BM-621		Enclosure Mounting Bracket Right	D&V Prec. Sht Mtl	
BM-622		1" KZ Actuator Bracket	D&V Prec. Sht Mtl	
BM-623		2" KZ Actuator Bracket	D&V Prec. Sht Mtl	
BM-392		CONDUIT Liquid tight FITTING, 1/2"	Heyco Products Co.	<a href="#">8402</a>
BM-393		1/2" BLACK MOUNTING BRKT	Heyco Products Co.	<a href="#">1027</a>
BM-394		PLUG, DOME 2.50"	Heyco Products Co.	<a href="#">2790</a>
BM-395	#1.77	CORDGRIP, LIQUID TIGHT, FITTING, 1/2"	Heyco Products Co.	<a href="#">3231</a>
BM-396	#1.78	NYLON STRAIGHT NPT, FITTING, 1/2"	Heyco Products Co.	<a href="#">8402</a>
BM-397	#1.79	NYLON 90 DEGREE NPT, FITTING, 1/2"	Heyco Products Co.	<a href="#">8425</a>
BM-398	#1.80	SEALING WASHERS, 1/2" □	Heyco Products Co.	<a href="#">3260</a>
BM-399	#1.81	NYLON STRAIGHT NPT, FITTING, 3/4"	Heyco Products Co.	<a href="#">8404</a>
BM-400	#1.82	SEALING WASHERS, 3/4" □	Heyco Products Co.	<a href="#">3261</a>
BM-401	#1.83	LIQUID TIGHT TUBING, 1/2"	Heyco Products Co.	<a href="#">8451</a>
BM-402	#1.84	LIQUID TIGHT TUBING, 3/4"	Heyco Products Co.	<a href="#">8452</a>
BM-403		1/2" NYLON CABLE CLAMPS	Heyco Products Co.	<a href="#">3375</a>
BM-404		CORDGRIP, LIQUID TIGHT, FITTING, 1"	Heyco Products Co.	<a href="#">M8439</a>
BM-405		LOCKNUT, NYLON, 1"	Heyco Products Co.	<a href="#">8467</a>
BM-406		LABELS, 81-90	PHOENIX CONTACT	<a href="#">1051016 81-90</a>
BM-407		RELAY, 3A (120VAC COIL)	PHOENIX CONTACT	<a href="#">29 66 19 7</a>
BM-408	#1.35	POWER SUPPLY, (24VDC 10A )	PHOENIX CONTACT	<a href="#">29 38 60 4</a>
BM-409	#1.36	RELAY, 3A (24VDC COIL)	PHOENIX CONTACT	<a href="#">29 66 63 4</a>
BM-410	#1.37	RELAY, 3A (120VAC COIL)	PHOENIX CONTACT	<a href="#">29 66 65 0</a>
BM-411	#1.38	TERMINALS, UT4 GRAY	PHOENIX CONTACT	<a href="#">30 44 10 2</a>
BM-412		TERMINALS, UT4-TG GRAY	PHOENIX CONTACT	<a href="#">30 46 14 2</a>
BM-413	#1.40	TERMINALS, UT4-PE GREEN	PHOENIX CONTACT	<a href="#">30 44 12 8</a>
BM-414	#1.41	END ANCHORS, GRAY	PHOENIX CONTACT	<a href="#">08 00 88 6</a>
BM-415		LABELS, 1-10	PHOENIX CONTACT	<a href="#">1051016 1-10</a>
BM-416		FUSE, PLUGS 5x22MM (250VAC)	PHOENIX CONTACT	<a href="#">30 36 83 5</a>
BM-417		FUSE, PLUGS 5x22MM (24VDC)	PHOENIX CONTACT	<a href="#">30 36 81 9</a>

BM #	HMI #	DESCRIPTION	MFG_NAME	MFG_PART_ID
BM-418	#1.52	JUMPERS, (2 POSITION)	PHOENIX CONTACT	<u>30 30 33 6</u>
BM-419		JUMPERS, (3 POSITION)	PHOENIX CONTACT	<u>30 30 24 2</u>
BM-420	#1.54	JUMPERS, (4 POSITION)	PHOENIX CONTACT	<u>30 30 25 5</u>
BM-421		RAIL, DIN (34MM X 2M LG)	PHOENIX CONTACT	<u>08 01 73 3</u>
BM-422		END BARRIERS, UT4	PHOENIX CONTACT	<u>30 47 02 8</u>
BM-423		RELAY, 3A (24VDC COIL)	PHOENIX CONTACT	<u>29 66 17 1</u>
BM-424		JUMPERS, (10 POSITION)	PHOENIX CONTACT	<u>30 30 27 1</u>
BM-425		JUMPERS, (20 POSITION)	PHOENIX CONTACT	<u>30 30 36 5</u>
BM-426	#1.51	FUSE BLOCK, 5x22MM (250VAC)	PHOENIX CONTACT	<u>30 46 10 0</u>
BM-427	#1.50	FUSE BLOCK, 5x22MM (24VDC)	PHOENIX CONTACT	<u>30 46 09 0</u>
BM-428		LABELS, 221-230	PHOENIX CONTACT	<u>1051016 221-230</u>
BM-429		JUMPER, BAR	PHOENIX CONTACT	<u>2966692</u>
BM-430		POWER SUPPLY, (24VDC 5A )	PHOENIX CONTACT	<u>29 38 58 1</u>
BM-431	#1.5	PLC BASE, (TWIDO)	SQUARE D	<u>TWDLCAA24DRF</u>
BM-432	#1.6	HIGH LEVEL INPUT ANALOG MODULE, (TWIDO) old plc	SQUARE D	<u>TWDAM12HT</u>
BM-433	#1.6	LOW LEVEL INPUT ANALOG MODULE, (TWIDO) old plc for heater	SQUARE D	<u>TWDALM3LT</u>
BM-434		MEMORY MODULE, (TWIDO) for plc memory	SQUARE D	<u>TWDXCPMFK32</u>
BM-435		HMI UNIT	SQUARE D	<u>XBTN401</u>
BM-436		CABLE, FOR HMI UNIT	SQUARE D	<u>XBTZ968</u>
BM-437	#1.11	BREAKERS, CIRCUIT 2 POLE (20A)	SQUARE D	<u>60147</u>
BM-438		BREAKERS, CIRCUIT 2 POLE (10A)	SQUARE D	<u>60144</u>
BM-439	#1.13	MOTOR STARTER, 32A (120V COIL )	SQUARE D	<u>LC1D32G7</u>
BM-440	#1.14	OVERLOAD, THERMAL (0-21A)	SQUARE D	<u>LRD21</u>
BM-441		CONTACTOR, 9A ( 120V COIL )	SQUARE D	<u>LC1K0910G7</u>
BM-442		ROTARY, DISCONNECT 43A WITH ROD	SQUARE D	<u>VCCF3</u>
BM-443	#1.17	POWER DISTRIBUTION BLOCK	SQUARE D	<u>9080LBA161101</u>
BM-444	#1.18	GROUND BAR	SQUARE D	<u>PK9GTA</u>
BM-445		PLUG, 22MM	SQUARE D	<u>ZB5SZ3</u>
BM-446	#1.20	RELAY, 6A (120V COIL)	SQUARE D	<u>LC1K0610G7</u>
BM-447		SWITCH, SELECTOR (BUTTON)	SQUARE D	<u>ZB4BD7</u>
BM-448		PUSH BUTTON, (BASE W 1 N.C. CONTACT)	SQUARE D	<u>XB4BT42</u>
BM-449		CONTACT BLOCKS, (N.O.)	SQUARE D	<u>ZBE101</u>
BM-450		CONTACT BLOCKS, (BASE WITH N.C.)	SQUARE D	<u>ZB4BZ102</u>
BM-451		LEGEND PLATE, (E-STOP)	SQUARE D	<u>ZBY2330</u>
BM-452		LEGEND PLATE, (AUTO/OFF)	SQUARE D	<u>ZBY2385</u>
BM-453		BLUE, TRANSDUCER, PRESSURE (0-3 PSI)	SQUARE D	<u>XLM-E001U1C21</u>
BM-454		CONNECTOR FOR TRANSDUCER	SQUARE D	<u>XZ-CC43FCP40B</u>
BM-455		CABLE, FOR HMI UNIT 1METER	SQUARE D	<u>TWDXCARJ010</u>
BM-456	#1.12	BREAKERS, CIRCUIT 1 POLE (10A)	SQUARE D	<u>60110</u>
BM-457		CABLE, FOR HMI UNIT 3 METER	SQUARE D	<u>TWDXCARJ030</u>
BM-458		LARGE HMI UNIT COLOR	SQUARE D	<u>XBTG4330</u>
BM-459		PUSH BUTTON ( START ) ,22MM	SQUARE D	<u>ZB4BA333</u>
BM-460		PUSH BUTTON ( STOP ) ,22MM	SQUARE D	<u>ZB4BL434</u>
BM-461		22MM BASE WITH N.O CONTACT BLOCK	SQUARE D	<u>ZB4BZ101</u>
BM-462		PUSH BUTTON, BLACK	SQUARE D	<u>ZB4BA2</u>
BM-463		PUSH BUTTON, BLUE	SQUARE D	<u>ZB4BA6</u>
BM-464		PILOT LIGHT , 24VDC LED GREEN	SQUARE D	<u>ZB4BVB3</u>
BM-465		HANDLE, DISCONNECT	SQUARE D	<u>GS1 AH 102</u>
BM-466		ROTARY, DISCONNECT 30A	SQUARE D	<u>LK3 DU 3</u>
BM-467		SHAFT, DISCONNECT	SQUARE D	<u>GS1 AE 7</u>
BM-468		SELECTOR SWITCH, BLACK 3 MOMENTARY	SQUARE D	<u>ZB5AD7</u>
BM-469		BREAKERS, CIRCUIT 3 POLE (50A)	SQUARE D	<u>MG24545</u>
BM-470		MOTOR STARTER, 50A (120V COIL )	SQUARE D	<u>LC1D50G7</u>
BM-471		OVERLOAD, THERMAL (37-50A)	SQUARE D	<u>LRD3357</u>
BM-472		ROTARY, DISCONNECT 63A WITH ROD	SQUARE D	<u>VCCF4</u>
BM-473		OVERLOAD, THERMAL (48-65A)	SQUARE D	<u>LRD3359</u>
BM-474		BREAKERS, CIRCUIT 3 POLE (63A)	SQUARE D	<u>MG24546</u>
BM-475		PUSH BUTTON ENCLOSURE, 3 HOLE UNIT	SQUARE D	<u>XALD03</u>
BM-476		CONTACT BLOCK , N.O.	SQUARE D	<u>ZENL1111</u>

BM #	HMI #	DESCRIPTION	MFG_NAME	MFG_PART_ID
BM-477		CONTACT BLOCK , N.C.	SQUARE D	<a href="#">ZENL1121</a>
BM-478		PILOT LIGHT , 24VDC LED	SQUARE D	<a href="#">ZALVB3</a>
BM-479		GREEN LENS FOR LED PILOT LIGHT	SQUARE D	<a href="#">ZB5AV033</a>
BM-480		E-STOP BUTTON , 22MM	SQUARE D	<a href="#">ZB5AT44</a>
BM-481		SELECTOR SWITCH , 2 POSITION ,22MM	SQUARE D	<a href="#">ZB5AD2</a>
BM-482		LEGEND PLATE, START/STOP	SQUARE D	<a href="#">ZBY2366</a>
BM-483		BREAKERS, CIRCUIT 3 POLE (30A)	SQUARE D	<a href="#">60182</a>
BM-484		OVERLOAD, THERMAL (17-25A)	SQUARE D	<a href="#">LRD1522</a>
BM-485		HMI UNIT B/W	SQUARE D	<a href="#">XBTGT2120</a>
BM-486		HMI UNIT WITH VIDEO INPUT	SQUARE D	<a href="#">XBTGT4340</a>
BM-487		HMI ADAPTER INTERFACE CABLE	SQUARE D	<a href="#">XBTZG909</a>
BM-488		EXPANSION INPUT/OUTPUT MODULE (4)	SQUARE D	<a href="#">TWDDMM8DRT</a>
BM-489		PILOT LIGHT HEAD GREEN	SQUARE D	<a href="#">ZB4BV033</a>
BM-490		OVERLOAD, THERMAL (23-28A)	SQUARE D	<a href="#">LRD1530</a>
BM-491		HMI ADAPTER INTERFACE CABLE	SQUARE D	<a href="#">XBTZ9780</a>
BM-492		CABLE, PC TO B/W HMI , USB TO USB	SQUARE D	<a href="#">XBTZG935</a>
BM-493		SELECTOR SWITCH, 3 POSITION MAINT	SQUARE D	<a href="#">ZB4BJ3</a>
BM-494		E-STOP BUTTON	SQUARE D	<a href="#">ZB4BT4</a>
BM-495		22MM BASE UNIT W/ 2-N.O. CONTACTS BLOCKS	SQUARE D	<a href="#">ZB4BZ103</a>
BM-496		LEGEND PLATE, (HAND-OFF-AUTO)	SQUARE D	<a href="#">ZBY2387</a>
BM-497		PLC BASE, MODULE UNIT(TWIDO)	SQUARE D	<a href="#">TWDLMDA20DRT</a>
BM-498		INPUT MODULE , 16PT	SQUARE D	<a href="#">TWDDDI16DT</a>
BM-499		OUTPUT MODULE , 16PT	SQUARE D	<a href="#">TWDDRA16RT</a>
BM-500		ANALOG INPUT , 4PT new plc	SQUARE D	<a href="#">TWDAMM6HT</a>
BM-501		SERIAL LINK ADAPTER RS485	SQUARE D	<a href="#">TWDNOZ485D</a>
BM-502		BREAKERS, CIRCUIT 3 POLE (15A)	SQUARE D	<a href="#">60179</a>
BM-453		Pressure Transducer - Silver, 0 - +1 Bar range	SQUARE D	<a href="#">XML-G001D21</a>
BM-630		TRANSDUCER, PRESSURE,XMLG	SQUARE D	<a href="#">XMLG001D21SAL</a>
BM-638		MEMORY MODULE, (TWIDO) for NEW plc memory 64K	Square D	<a href="#">TWDXCPMFK64</a>
BM-503		5/16-18" 18-8 Stainless Steel Flange Lock Nut	FASTENAL	<a href="#">110129151</a>
BM-504		3/16 Dia .126-.250" Grip Range SSB64S Stainless Rivet	FASTENAL	<a href="#">41425</a>
BM-505	#31	1" SlipxMPT PVC Sched 80 Male Adapter Coupling	FASTENAL	<a href="#">836-010</a>
BM-506	#46	2" SlipxFPT PVC Sched 80 Female Adapter Coupling	FASTENAL	<a href="#">835-020</a>
BM-507		2" SlipxSlip PVC Sched 80 90Deg Socket Elbow	FASTENAL	<a href="#">806-020</a>
BM-508		3/8-16 x 2" Pipe 304 S/S Round Bend U-Bolt	FASTENAL	<a href="#">74638</a>
BM-509		5/16-18 x 3/4" 18-8 Stainless Steel Carriage Bolt	FASTENAL	<a href="#">74429</a>
BM-510		3/8-16 x 3" 18-8 Stainless Steel Carriage Bolt	FASTENAL	<a href="#">74441</a>
BM-511		3/8-16" 18-8 Stainless Steel Flange Lock Nut	FASTENAL	<a href="#">110129152</a>
BM-512	#41	1"x1/2" SPGxFPT PVC Sched 80 Flush Thrd Reducing Bushing	FASTENAL	<a href="#">838-130</a>
BM-513	#42	1" SlipxSlip PVC Sched 80 90Deg Socket Elbow	FASTENAL	<a href="#">806-010</a>
BM-514	#43	1" SlipxFPT PVC Sched 80 Female Adapter Coupling	FASTENAL	<a href="#">835-010</a>
BM-515	#28	1-1/4" SlipxFPT PVC Sched 80 Female Adapter Coupling	FASTENAL	<a href="#">835-012</a>
BM-516	#26	1-1/4" SlipxSlip PVC Sched 80 90Deg Socket Elbow	FASTENAL	<a href="#">806-012</a>
BM-517	#29	1-1/4" SxSxS PVC Sched 80 Socket Tee	FASTENAL	<a href="#">801-012</a>
BM-518	#27	1-1/4"x1" SPGxFPT PVC Sched 80 Flush Thrd Reducing Bushing	FASTENAL	<a href="#">838-168</a>
BM-519		10-24 x 1/2" Plain Finish Button Head Socket Cap Screw	FASTENAL	<a href="#">24030</a>
BM-520		3/4"-10 316 S/S Nylon Insert Lock Nut Type NE	FASTENAL	<a href="#">77867</a>
BM-521		3/8"x4" 1000Lb-WLL 304 Stainless Steel Welded Eye Bolt	FASTENAL	<a href="#">74667</a>
BM-522		1/4-20 x 1/2" Stainless Steel Button Head Socket Cap Screw	FASTENAL	<a href="#">73752</a>
BM-523		10-24 18-8 Stainless Steel Nylon Insert Lock Nut	FASTENAL	<a href="#">70857</a>
BM-524		5/16" x 3/4" T316 Stainless Steel Flat Washer	FASTENAL	<a href="#">1778015</a>
BM-525		#10-32 x 1/2" Phillips 18-8 S/S Pan Head Machine Screw	FASTENAL	<a href="#">72515</a>
BM-526		5/16"-18 x 1" 18-8 Stainless Steel Hex Cap Screw	FASTENAL	<a href="#">70055</a>
BM-527		3/8-16 18-8 Stainless Steel Nylon Insert Lock Nut	FASTENAL	<a href="#">70862</a>
BM-528		5/16-18 x 1" 18-8 Stainless Steel Carriage Bolt	FASTENAL	<a href="#">74430</a>
BM-529		1/4" x 1 3/8" Acorn Nut Sleeve Anchor Zinc	FASTENAL	<a href="#">50342</a>
BM-530		1/4 x 1-1/2" Hot Dipped Galvanized, Hex Lag Screw	FASTENAL	<a href="#">22088</a>
BM-531		#6 x 3/8" Phillips 18-8 SS Oval Head Sheet Metal Screw	FASTENAL	<a href="#">72290</a>
BM-532		#10 x 5/8" Phillips 18-8 S/S Oval Head Sheet Metal Screw	FASTENAL	<a href="#">72292</a>

BM #	HMI #	DESCRIPTION	MFG_NAME	MFG_PART_ID
BM-533		1/2" Schedule 40 Female Adapter	FASTENAL	<a href="#">704423</a>
BM-534		3/4" Schedule 40 Female Adapter	FASTENAL	<a href="#">704424</a>
BM-535		1/2" Schedule 40 Male Terminal Adapter	FASTENAL	<a href="#">704417</a>
BM-536		3/4" Schedule 40 Male Terminal Adapter	FASTENAL	<a href="#">704418</a>
BM-537		5/16"-18 x 1 1/4" 18-8 Stainless Steel Hex Cap Screw	FASTENAL	<a href="#">70057</a>
BM-538		1/4"-20 x 2" 18-8 Stainless Steel Hex Cap Screw	FASTENAL	<a href="#">70011</a>
BM-539		5/16"-18 Hex Full Nut 316 Stainless Steel	FASTENAL	<a href="#">77711</a>
BM-540		1/4"-20 18-8 Stainless Steel Hex Full Nut	FASTENAL	<a href="#">70710</a>
BM-541		1/4" x 11/16 " 18-8 Stainless Steel Flat Washer	FASTENAL	<a href="#">71014</a>
BM-542		10-32 x 5/8" 18-8 S/S Button Head Socket Cap Screw	FASTENAL	<a href="#">73744</a>
BM-543		10-32x3/8" Hex Washer Slot Type F Zinc Thread Cutting	FASTENAL	<a href="#">32392</a>
BM-544		10-32x1/2" Hex Washer Slot Type F Zinc Thread Cutting	FASTENAL	<a href="#">32393</a>
BM-545		3/4"x1/2" SPIGXFPT PVC Sched 40 Bushing	FASTENAL	<a href="#">471658</a>
BM-546		1/4-20 x 3/4" 18-8 S/S Button Head Socket Cap Screw	FASTENAL	<a href="#">73754</a>
BM-547		1/4" Zinc Plated USS Flat Washer	FASTENAL	<a href="#">1133004</a>
BM-548		10-32 18-8 Stainless Steel Nylon Insert Lock Nut	FASTENAL	<a href="#">70858</a>
BM-549		5/16-18 x 1-1/2" 18-8 Stainless Steel Carriage Bolt	FASTENAL	<a href="#">74432</a>
BM-550		1" SlipxSlip PVC Sched 80 Socket Coupling	FASTENAL	<a href="#">470438</a>
BM-551		1-1/4" SlipxSlip PVC Sched 80 Socket Coupling	FASTENAL	<a href="#">470439</a>
BM-552		10/32 X 1/2 PHILLIPS PAN THREAD CUTTING SCREW TY-F, 410SS	FASTENAL	<a href="#">175969</a>
BM-553		#10 .218x.437" T316 Stainless Steel Flat Washer	FASTENAL	<a href="#">78009</a>
BM-554		5/16-18 x 5" 18-8 Stainless Steel Carriage Bolt	FASTENAL	<a href="#">74404</a>
BM-555		5/16-18 18-8 Stainless Steel Nylon Insert Lock Nut	FASTENAL	<a href="#">70861</a>
BM-556		1/2" MPT x Close PVC Sched 80 Threaded Pipe Nipple	FASTENAL	<a href="#">470793</a>
BM-557		1/2" FPTxFPT PVC Sched 40 Coupling	FASTENAL	<a href="#">471564</a>
BM-558		2" Standard Pipe & Rigid Conduit Strut Pipe Clamps	FASTENAL	<a href="#">48886</a>
BM-559		3/4" Rigid/Thin Wall Conduit-Zinc Strut Pipe Clamps	FASTENAL	<a href="#">49061</a>
BM-560		2" SlipxSlip PVC Sched 80 Socket Coupling	FASTENAL	<a href="#">470441</a>



AccuBrine® automated brine maker

Manufacturer Warranty Terms

**One-Year Limited Brine Maker Warranty**

Cargill Deicing Technology (CDT) warrants to customers who purchase new AccuBrine® automated brine makers from CDT's authorized distributors or from CDT ("original purchasers") that the AccuBrine® automated brine maker ("Brine Maker") will be free from defects in material and workmanship for a period of one (1) year beginning after the completion date of installation and customer training, and that CDT will repair any defect in material or workmanship, and repair or replace any defective part, subject to the conditions, limitations, and exclusions set forth herein. CDT will cover all parts and labor for the first year of qualified repairs or replacements for original purchasers.

**Conditions, Limitations, Exclusions**

This warranty is subject to the additional following conditions, limitations, and exclusions:

***To obtain warranty service, the following conditions must be met:***

- The original purchaser must complete the warranty registration form included with the shipped brine maker after installation and training.
- The original purchaser must notify CDT or an authorized distributor of the need for warranty service within five (5) business days of discovering any defect in material or workmanship and/or any defective part.
- Warranty service must be performed by CDT or an authorized CDT service representative.

***This warranty is subject to the following limitations:***

- This warranty applies only if the Brine Maker is put to ordinary, reasonable, brine making uses.
- CDT may from time to time change the design of its products. Nothing contained in this warranty shall be construed as obligating CDT to incorporate such designs into previously manufactured products, nor shall such changes be construed as an admission that previous designs were defective.

***The following items are excluded from this warranty:***

- Parts that are not from the original manufacturer are not covered by this warranty.
- Any defect resulting from an individual or entity's misuse, alteration, improper adjustment, neglect, or accident—including but not limited to any damage caused to any components by vehicles or other mobile equipment striking any component of the Brine Maker—is not covered by this warranty. If the Brine Maker must be stored prior to installation and customer training, this warranty does not cover any damage to the Brine Maker or its components resulting from the purchaser's neglect or failure to use due care in handling and storing the Brine Maker.



AccuBrine® automated brine maker

Manufacturer Warranty Terms

**Disclaimer of Further Warranty**

EXCEPT AS OTHERWISE PROVIDED IN THIS DOCUMENT, CDT MAKES NO WARRANTIES OF MERCHANTABILITY, QUALITY, FITNESS FOR A PARTICULAR PURPOSE, CAPACITY, DESCRIPTION OR OTHERWISE—WHETHER EXPRESS, IMPLIED, STATUTORY, OR ARISING FROM COURSE OF PERFORMANCE, COURSE OF DEALING OR USAGE OF TRADE. THERE ARE NO ORAL AGREEMENTS OR WARRANTIES COLLATERAL TO OR AFFECTING THE SUPPLY AGREEMENT.

This One (1) Year Limited Brine Maker Warranty is specifically intended for the original purchasers of AccuBrine® automated Brine Makers. CDT expressly disclaims any warranty of any type to any subsequent purchasers of the automated Brine Makers.

If applicable state law provides that an implied warranty of merchantability, an implied warranty of fitness for a particular purpose, or any other implied warranty applies to CDT, then any such implied warranty is limited to the duration of this warranty.

**Limitation of Remedy and Damages**

CDT's liability under this warranty, and under any implied warranty required by law, is limited to repair of any defect in workmanship, and repair or replacement of any defective part, shall in no event exceed the purchase price of the product. CDT shall in no event be liable for incidental, special, or consequential damages (including lost profits) whether the claim is based on contract, tort, strict liability or any other theory.



**AccuBrine® automated brine maker**

**Warranty Claim Form**

Date of Claim: \_\_\_\_\_

Claim #: \_\_\_\_\_

**Owner Information:**

Owner Name: \_\_\_\_\_

Owner Address: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Owner Phone: \_\_\_\_\_

Owner Fax number: \_\_\_\_\_

Owner E-mail: \_\_\_\_\_

**Claimant Information:**

Claimant Name: \_\_\_\_\_

Claimant Address: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Claimant Phone: \_\_\_\_\_

Claimant Fax number: \_\_\_\_\_

Claimant E-mail: \_\_\_\_\_

**Brine Maker Information:**

Tank Serial Number: \_\_\_\_\_

Control Panel Serial #: \_\_\_\_\_

Brine Maker Location: \_\_\_\_\_

**For Internal Cargill Use Only:**

Claim Number: \_\_\_\_\_

Original Ship Date: \_\_\_\_\_

Disposition of Claim: \_\_\_\_\_

Approved By: \_\_\_\_\_

**Part in Question:**

Description of Part: \_\_\_\_\_  
 (Include digital pictures as well, if applicable)

Location of Part on unit: \_\_\_\_\_

Manufacturer Part Number: \_\_\_\_\_

Cargill Part Number: \_\_\_\_\_

Issue Claimed:  
 (Describe in detail, include probable cause)

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Please remit by mail, fax or email to:**

Cargill Deicing Technology Phone: 866-900-7258  
 Attn: Warranty Department Fax: 440-716-4732  
 24950 Country Club Blvd, Suite 450 Email: accubrine\_service@cargill.com  
 North Olmsted, OH 44070

**FOR DEALER USE ONLY**

Will you need assistance with installing the part?    Yes ?                      No ?

Labor (\$/hr) \_\_\_\_\_

Part cost (if applicable) (\$) \_\_\_\_\_

Travel Time: (\$/hour) \_\_\_\_\_

Shipping (if applicable) (\$) \_\_\_\_\_

Mileage (\$.xx/mile) \_\_\_\_\_



A Cargill Deicing Technology Product



AccuBrine® automated brine maker

Customer Warranty Claim instructions

*If you purchased your brine maker from a dealer, please contact your local dealer.*

If you purchased your brine maker directly from CDT (Cargill Deicing Technology), please call the Customer Service Department at 866-900-SALT (7258) and provide information as shown on the "Warranty Claim Form". You may also fax, e-mail or mail the form to the Customer Service Department as indicated on the form.

Notification of a claim does not guarantee payment of a claim. Claim approval is subject to terms of the Manufacturer Warranty Terms.

AB205 11/10/09



A Cargill Deicing Technology Product



AccuBrine® automated brine maker

Return Materials Authorization Form

To Be Completed By  
Customer/Dealer

Contact Name:	Company Name:	Return Ship Address (if different)		
Phone No:	Address:			
Fax No:				
Date:				
		Return Ship Via:		
Cargill Part Number	Warranty Yes/No	Qty	Reason for Return	Original PO# / Invoice #

When form is completed please e-mail to [accubrine\\_service@cargill.com](mailto:accubrine_service@cargill.com) or fax to 440-716-4732

<b>YOUR RMA NUMBER IS:</b> (Assigned by Cargill)	
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When you receive your RMA number please return item(s) to:

Anderson Tool & Engineering  
1735 W 53rd St  
Anderson, IN 46013  
Attn: AccuBrine® Product Engineer

Mark the RMA number on the outside of the box.

<b>For Cargill Internal Use Only</b>
Date part(s) received:
Date to Credit Dept:

Parts returned under a warranty claim are governed by Cargill Deicing Technology's Limited Brine Maker Warranty.  
Parts returned in original condition for credit are governed by the following terms and conditions:

- Buyer must include original invoice for parts with return form.
- Parts must be returned in their original condition, custom made parts are not returnable.
- Partial kits are not returnable. Only complete parts as identified in applicable invoices are acceptable.
- All authorized parts shall be returned to Cargill Deicing Technology at the Buyer's expense.
- Upon receipt of parts, Cargill Deicing Technology shall inspect such parts and if found acceptable, shall credit Buyer for the cost of the parts and charge the buyer a 20 percent restocking fee.



A Cargill Deicing Technology Product

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